

# Streaming Responses AFN

## Motivation

In the case of shipping options request, any delay of the response will directly impact the customer. The customer must sit and wait on the checkout page for the response arriving from shipping-service, containing multiple shipping options, in order for the frontend to render them and show them to the customer. This is one big pain which impacts the customer.

## Digging for the reasons

In shipping-service, there are multiple calls to be made in order to resolve all possible shipping options. Most of the calls are done to omnihub services or 3rd party services.

CnC looks to be the slowest to respond because multiple stores have to be resolved with expectedPickup date, and that call might be slow. Other fulfillment types can be optimised in the future as well, but CnC looks to be the use case which can bring the most value if refactored.

The way the response is built and delivered, is that in one option of the CnC merges all store information into the response. So cannot build and return a response without having all stores already resolved.

Some types of shipping options can be resolved very fast, some types might be a lot slower.

During hype when load is higher than usual, some systems might support better scalability than other systems, and thus meaning the load might impact differently performance of some of the systems.

During high load we often see timeouts in our systems.

## Proposition

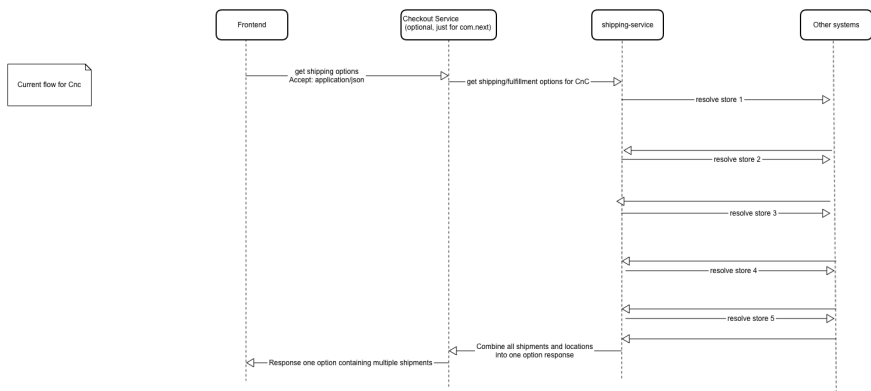
Offer a possibility for the CnC flow for using streaming. The response might be break down into smaller independent logical units chunks (each one still a shipping option but containing data of a single store) and returned to client as they are ready.

This can be offered only for a certain Accept header which specifies the expected response as a stream.

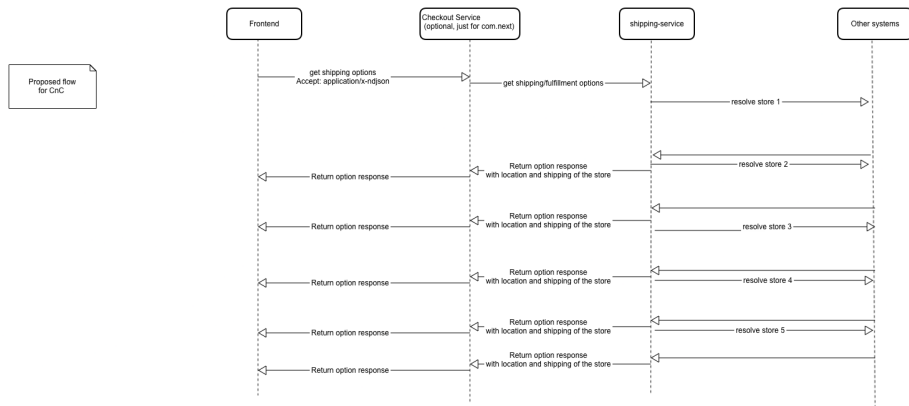
Offers to frontend the opportunity to hydrate with some data very early on, and offering an improved user experience if the user already can see some shipping options as soon as possible, without seeing all possible options.

While new options arrive, a loading spinner might be shown, or some other symbol, and while more options arrive to frontend, frontend can hydrate and populate more and more so the user will have more options to choose.

## Current flow for CnC



## Proposed flow for CnC



## Expected change

### Single shipment

The response for the use case of CnC will be split into multiple shipping options, each one containing one shipment in the case of one shipment expected and create an option containing one location and one shipment only. The shipment and location are populated based on the response from omnihub depending on a single store information.

### Split shipment

Split shipments will be supported as well, as each option for shipping has in the structure an array of shipping and locations. The refactoring keeps same structure, it just creates one option with data of a single store.

## Responses

The logic and apis remain same. We will add a new endpoint which is able to produce **application/x-ndjson**.

The technology stack used in shipping-service already is able stream the response back, it only needs to be incorporated as a Flux instead of a List.

### Existing CnC response:

### Accept: application/json response

```
curl --location --request POST 'http://localhost:8080/shipping-options?embed=ClickAndCollect' \  
\  
> --header 'Accept: application/json' \  
\  
> --header 'Content-Type: application/json' \  
\  
> --header 'Cookie: JSESSIONID=DC227B0F43341CD98C961FEF203D2A5B' \  
\  
> --data-raw '{  
\  
>   "siteId": "adidas-IT",  
\  
>   "currencyCode": "EUR",  
\  
>   "locale": "it-IT",  
\  
>   "channel": "Web",  
\  
>   "membershipStatus": "active",  
\  
>   "basketTotal": 100,  
\  
>   "productLines": [  
\  
>     {  
\  
>       "id": "1",  
\  
>       "sku": "M20323_540",  
\  
>       "quantity": 2,  
\  
>       "lineType": "inline"  
\  
>     }  
\  
>   ]  
\  
> }'
```

## RESPONSE – arriving after 2.5 seconds

```
[  
  {  
    "fulfillmentType": "ClickAndCollect",  
    "name": "Click And Collect",  
    "description": "Click And Collect",  
    "locations": [  
      {  
        "id": "9990000979",  
        "locationName": "adidas Store Roissy-en-France",  
        "address": {  
          "phone": "+33 1 73 43 18 06",  
          "state": "IDF",  
          "country": "FR",  
          "postalCode": "95700",  
          "city": "Roissy-en-France",  
          "addressLine1": "Rue des Buissons 30",  
          "addressLine2": null  
        },  
        "geoLocation": {  
          "longitude": 2.521963,  
          "latitude": 48.99127  
        },  
        "openingHours": {
```

```

        "sunday": {
            "startHours": "10",
            "startMinutes": "00",
            "endHours": "20",
            "endMinutes": "00"
        },
        "saturday": {
            "startHours": "10",
            "startMinutes": "00",
            "endHours": "20",
            "endMinutes": "00"
        },
        "friday": {
            "startHours": "10",
            "startMinutes": "00",
            "endHours": "20",
            "endMinutes": "00"
        },
        "thursday": {
            "startHours": "10",
            "startMinutes": "00",
            "endHours": "20",
            "endMinutes": "00"
        },
        "wednesday": {
            "startHours": "10",
            "startMinutes": "00",
            "endHours": "20",
            "endMinutes": "00"
        },
        "tuesday": {
            "startHours": "10",
            "startMinutes": "00",
            "endHours": "20",
            "endMinutes": "00"
        },
        "monday": {
            "startHours": "10",
            "startMinutes": "00",
            "endHours": "20",
            "endMinutes": "00"
        }
    },
    "distance": 0.0,
    "sapShipToId": "0600110034",
    "sapPlantId": "3316"
},
{
    "id": "9990000481",
    "locationName": "Originals Flagship Store Paris, Rue des Rosiers",
    "address": {
        "phone": "+33 1 73 43 18 06",
        "state": "IDF",
        "country": "FR",
        "postalCode": "75004",
        "city": "Paris",
        "addressLine1": "Rue des Rosiers 3 ter",
        "addressLine2": null
    },
    "geoLocation": {
        "longitude": 2.3605218,
        "latitude": 48.856457
    },
    "openingHours": {
        "sunday": {
            "startHours": "12",
            "startMinutes": "00",
            "endHours": "20",
            "endMinutes": "00"
        },
        "saturday": {

```

```

        "startHours": "11",
        "startMinutes": "00",
        "endHours": "20",
        "endMinutes": "00"
    },
    "friday": {
        "startHours": "11",
        "startMinutes": "00",
        "endHours": "19",
        "endMinutes": "00"
    },
    "thursday": {
        "startHours": "11",
        "startMinutes": "00",
        "endHours": "19",
        "endMinutes": "00"
    },
    "wednesday": {
        "startHours": "11",
        "startMinutes": "00",
        "endHours": "19",
        "endMinutes": "00"
    },
    "tuesday": {
        "startHours": "11",
        "startMinutes": "00",
        "endHours": "19",
        "endMinutes": "00"
    },
    "monday": {
        "startHours": "11",
        "startMinutes": "00",
        "endHours": "19",
        "endMinutes": "00"
    }
},
"distance": 19074.0,
"sapShipToId": "0600110024",
"sapPlantId": "3331"
},
{
    "id": "9990086344",
    "locationName": "adidas Brand Center Paris, Boulevard Haussmann",
    "address": {
        "phone": "+33 1 73 43 18 06",
        "state": "IDF",
        "country": "FR",
        "postalCode": "75009",
        "city": "Paris",
        "addressLine1": "Boulevard Haussmann 39-41",
        "addressLine2": null
    },
    "geoLocation": {
        "longitude": 2.3297825,
        "latitude": 48.873272
    },
    "openingHours": {
        "sunday": {
            "startHours": "11",
            "startMinutes": "00",
            "endHours": "19",
            "endMinutes": "00"
        },
        "saturday": {
            "startHours": "10",
            "startMinutes": "00",
            "endHours": "20",
            "endMinutes": "00"
        },
        "friday": {
            "startHours": "10",

```

```

        "startMinutes": "00",
        "endHours": "20",
        "endMinutes": "00"
    },
    "thursday": {
        "startHours": "10",
        "startMinutes": "00",
        "endHours": "20",
        "endMinutes": "00"
    },
    "wednesday": {
        "startHours": "10",
        "startMinutes": "00",
        "endHours": "20",
        "endMinutes": "00"
    },
    "tuesday": {
        "startHours": "10",
        "startMinutes": "00",
        "endHours": "20",
        "endMinutes": "00"
    },
    "monday": {
        "startHours": "10",
        "startMinutes": "00",
        "endHours": "20",
        "endMinutes": "00"
    }
},
"distance": 19215.0,
"sapShipToId": "0600110049",
"sapPlantId": "3327"
},
{
    "id": "9990086654",
    "locationName": "adidas Flagship Store Paris",
    "address": {
        "phone": "+33 1 73 43 18 06",
        "state": "IDF",
        "country": "FR",
        "postalCode": "75008",
        "city": "Paris",
        "addressLine1": "Avenue des Champs-Elysees 22",
        "addressLine2": null
    },
    "geoLocation": {
        "longitude": 2.309695,
        "latitude": 48.869133
    },
    "openingHours": {
        "sunday": {
            "startHours": "10",
            "startMinutes": "00",
            "endHours": "20",
            "endMinutes": "30"
        },
        "saturday": {
            "startHours": "10",
            "startMinutes": "00",
            "endHours": "20",
            "endMinutes": "30"
        },
        "friday": {
            "startHours": "10",
            "startMinutes": "00",
            "endHours": "20",
            "endMinutes": "30"
        },
        "thursday": {
            "startHours": "10",
            "startMinutes": "00",

```

```

        "endHours": "20",
        "endMinutes": "30"
    },
    "wednesday": {
        "startHours": "10",
        "startMinutes": "00",
        "endHours": "20",
        "endMinutes": "30"
    },
    "tuesday": {
        "startHours": "10",
        "startMinutes": "00",
        "endHours": "20",
        "endMinutes": "30"
    },
    "monday": {
        "startHours": "10",
        "startMinutes": "00",
        "endHours": "20",
        "endMinutes": "30"
    }
},
"distance": 20613.0,
"sapShipToId": "0600110052",
"sapPlantId": "3326"
},
{
    "id": "9990047732",
    "locationName": "adidas Brand Center Puteaux",
    "address": {
        "phone": "+33 1 73 43 18 06",
        "state": "IDF",
        "country": "FR",
        "postalCode": "92092",
        "city": "Puteaux",
        "addressLine1": "Centre Commercial les 4 Temps 15",
        "addressLine2": null
    },
    "geoLocation": {
        "longitude": 2.239119,
        "latitude": 48.89052
    },
    "openingHours": {
        "sunday": {
            "startHours": "11",
            "startMinutes": "00",
            "endHours": "20",
            "endMinutes": "00"
        },
        "saturday": {
            "startHours": "10",
            "startMinutes": "00",
            "endHours": "20",
            "endMinutes": "30"
        },
        "friday": {
            "startHours": "10",
            "startMinutes": "00",
            "endHours": "20",
            "endMinutes": "30"
        },
        "thursday": {
            "startHours": "10",
            "startMinutes": "00",
            "endHours": "20",
            "endMinutes": "30"
        },
        "wednesday": {
            "startHours": "10",
            "startMinutes": "00",
            "endHours": "20",

```

```

        "endMinutes": "30"
    },
    "tuesday": {
        "startHours": "10",
        "startMinutes": "00",
        "endHours": "20",
        "endMinutes": "30"
    },
    "monday": {
        "startHours": "10",
        "startMinutes": "00",
        "endHours": "20",
        "endMinutes": "30"
    }
},
"distance": 23500.0,
"sapShipToId": "0600110046",
"sapPlantId": "3325"
}
],
"shipments": [
    {
        "shipmentId": "14ffb926-7c68-3ccb-83ac-f7e35012a324",
        "productLines": [
            {
                "id": "1",
                "sku": "H08837_500",
                "quantity": 2,
                "lineType": "inline"
            }
        ],
        "locationId": "9990000481",
        "shippingMethod": {
            "shippingMethodId": "99247271-b130-4eb3-9319-eb1f2b7a4de5",
            "customId": "shipToStore",
            "name": "Click & Collect",
            "description": "Click & Collect",
            "carrierName": "NONE",
            "carrierString": "shipToStore",
            "carrierService": "Standard",
            "taxClassId": "Undefined",
            "shippingMethodPrice": {
                "threshold": 23.0,
                "baseFixedPrice": 87.0,
                "shipmentUpsell": 11.0,
                "memberFixedPrices": {
                    "tier1": 87.0,
                    "tier2": 87.0,
                    "tier3": 87.0,
                    "tier4": 87.0
                }
            },
            "shipmentFixedPrice": 0.0,
            "shipmentPrice": 0.0
        }
    },
    "expectedPickupDate": "2023-01-26T00:00:00.000Z"
},
{
    "shipmentId": "be041b10-0c3d-3c68-a751-a2c582dec3db",
    "productLines": [
        {
            "id": "1",
            "sku": "H08837_500",
            "quantity": 2,
            "lineType": "inline"
        }
    ],
    "locationId": "9990086654",
    "shippingMethod": {
        "shippingMethodId": "99247271-b130-4eb3-9319-eb1f2b7a4de5",
        "customId": "shipToStore",

```



```

        "name": "Click & Collect",
        "description": "Click & Collect",
        "carrierName": "NONE",
        "carrierString": "shipToStore",
        "carrierService": "Standard",
        "taxClassId": "Undefined",
        "shippingMethodPrice": {
            "threshold": 23.0,
            "baseFixedPrice": 87.0,
            "shipmentUpsell": 11.0,
            "memberFixedPrices": {
                "tier1": 87.0,
                "tier2": 87.0,
                "tier3": 87.0,
                "tier4": 87.0
            }
        },
        "shipmentFixedPrice": 0.0,
        "shipmentPrice": 0.0
    },
    "expectedPickupDate": "2023-01-26T00:00:00.000Z"
},
{
    "shipmentId": "313aefbc-7d97-3c96-875c-c99780fce074",
    "productLines": [
        {
            "id": "1",
            "sku": "H08837_500",
            "quantity": 2,
            "lineType": "inline"
        }
    ],
    "locationId": "9990000979",
    "shippingMethod": {
        "shippingMethodId": "99247271-b130-4eb3-9319-eb1f2b7a4de5",
        "customId": "shipToStore",
        "name": "Click & Collect",
        "description": "Click & Collect",
        "carrierName": "NONE",
        "carrierString": "shipToStore",
        "carrierService": "Standard",
        "taxClassId": "Undefined",
        "shippingMethodPrice": {
            "threshold": 23.0,
            "baseFixedPrice": 87.0,
            "shipmentUpsell": 11.0,
            "memberFixedPrices": {
                "tier1": 87.0,
                "tier2": 87.0,
                "tier3": 87.0,
                "tier4": 87.0
            }
        },
        "shipmentFixedPrice": 0.0,
        "shipmentPrice": 0.0
    }
},
    "expectedPickupDate": "2023-01-26T00:00:00.000Z"
},
{
    "shipmentId": "98802054-cd2b-3ede-a34f-752b8bef1c2c",
    "productLines": [
        {
            "id": "1",
            "sku": "H08837_500",
            "quantity": 2,
            "lineType": "inline"
        }
    ],
    "locationId": "9990086344",
    "shippingMethod": {
        "shippingMethodId": "99247271-b130-4eb3-9319-eb1f2b7a4de5",

```

```

        "customId": "shipToStore",
        "name": "Click & Collect",
        "description": "Click & Collect",
        "carrierName": "NONE",
        "carrierString": "shipToStore",
        "carrierService": "Standard",
        "taxClassId": "Undefined",
        "shippingMethodPrice": {
            "threshold": 23.0,
            "baseFixedPrice": 87.0,
            "shipmentUpsell": 11.0,
            "memberFixedPrices": {
                "tier1": 87.0,
                "tier2": 87.0,
                "tier3": 87.0,
                "tier4": 87.0
            }
        },
        "shipmentFixedPrice": 0.0,
        "shipmentPrice": 0.0
    },
    "expectedPickupDate": "2023-01-26T00:00:00.000Z"
},
{
    "shipmentId": "7912fe8b-9710-383c-9be9-adb6d5efcfa2",
    "productLines": [
        {
            "id": "1",
            "sku": "H08837_500",
            "quantity": 2,
            "lineType": "inline"
        }
    ],
    "locationId": "9990047732",
    "shippingMethod": {
        "shippingMethodId": "99247271-b130-4eb3-9319-eb1f2b7a4de5",
        "customId": "shipToStore",
        "name": "Click & Collect",
        "description": "Click & Collect",
        "carrierName": "NONE",
        "carrierString": "shipToStore",
        "carrierService": "Standard",
        "taxClassId": "Undefined",
        "shippingMethodPrice": {
            "threshold": 23.0,
            "baseFixedPrice": 87.0,
            "shipmentUpsell": 11.0,
            "memberFixedPrices": {
                "tier1": 87.0,
                "tier2": 87.0,
                "tier3": 87.0,
                "tier4": 87.0
            }
        },
        "shipmentFixedPrice": 0.0,
        "shipmentPrice": 0.0
    }
},
    "expectedPickupDate": "2023-01-26T00:00:00.000Z"
}
]
}
]

```

Accept:application/x-ndjson

```
curl --location --request POST 'http://localhost:8080/shipping-options?embed=ClickAndCollect' \
--header 'Accept: application/x-ndjson' \
--header 'Content-Type: application/json' \
--header 'Cookie: JSESSIONID=DC227B0F43341CD98C961FEF203D2A5B' \
--data-raw '{
  "siteId": "adidas-IT",
  "currencyCode": "EUR",
  "locale": "it-IT",
  "channel": "Web",
  "membershipStatus": "active",
  "basketTotal": 100,
  "productLines": [
    {
      "id": "1",
      "sku": "M20323_540",
      "quantity": 2,
      "lineType": "inline"
    }
  ]
}'
```

## RESPONSE

### PART 1 - Location id 9990000481

```
{
  "fulfillmentType": "ClickAndCollect",
  "name": "Click And Collect",
  "description": "Click And Collect",
  "locations": [
    {
      "id": "9990000481",
      "locationName": "Originals Flagship Store Paris, Rue des Rosiers",
      "address": {
        "phone": "+33 1 73 43 18 06",
        "state": "IDF",
        "country": "FR",
        "postalCode": "75004",
        "city": "Paris",
        "addressLine1": "Rue des Rosiers 3 ter",
        "addressLine2": null
      },
      "geoLocation": {
        "longitude": 2.3605218,
        "latitude": 48.856457
      },
      "openingHours": {
        "sunday": {
          "startHours": "12",
          "startMinutes": "00",
          "endHours": "20",
          "endMinutes": "00"
        },
        "saturday": {
          "startHours": "11",
          "startMinutes": "00",
          "endHours": "20",
          "endMinutes": "00"
        },
        "friday": {
          "startHours": "11",
          "startMinutes": "00",
          "endHours": "19",
          "endMinutes": "00"
        },
        "thursday": {
          "startHours": "11",
```

```

        "startMinutes": "00",
        "endHours": "19",
        "endMinutes": "00"
    },
    "wednesday": {
        "startHours": "11",
        "startMinutes": "00",
        "endHours": "19",
        "endMinutes": "00"
    },
    "tuesday": {
        "startHours": "11",
        "startMinutes": "00",
        "endHours": "19",
        "endMinutes": "00"
    },
    "monday": {
        "startHours": "11",
        "startMinutes": "00",
        "endHours": "19",
        "endMinutes": "00"
    }
},
"distance": 19074.0,
"sapShipToId": "0600110024",
"sapPlantId": "3331"
}
],
"shipments": [
    {
        "shipmentId": "14ffb926-7c68-3ccb-83ac-f7e35012a324",
        "productLines": [
            {
                "id": "1",
                "sku": "H08837_500",
                "quantity": 2,
                "lineType": "inline"
            }
        ],
        "locationId": "9990000481",
        "shippingMethod": {
            "shippingMethodId": "99247271-b130-4eb3-9319-eb1f2b7a4de5",
            "customId": "shipToStore",
            "name": "Click & Collect",
            "description": "Click & Collect",
            "carrierName": "NONE",
            "carrierString": "shipToStore",
            "carrierService": "Standard",
            "taxClassId": "Undefined",
            "shippingMethodPrice": {
                "threshold": 23.0,
                "baseFixedPrice": 87.0,
                "shipmentUpsell": 11.0,
                "memberFixedPrices": {
                    "tier1": 87.0,
                    "tier2": 87.0,
                    "tier3": 87.0,
                    "tier4": 87.0
                }
            },
            "shipmentFixedPrice": 0.0,
            "shipmentPrice": 0.0
        }
    },
    {
        "expectedPickupDate": "2023-01-26T00:00:00.000Z"
    }
]
}

```

## PART 2 Location ID - 9990047732

```
{
  "fulfillmentType": "ClickAndCollect",
  "name": "Click And Collect",
  "description": "Click And Collect",
  "locations": [
    {
      "id": "9990047732",
      "locationName": "adidas Brand Center Puteaux",
      "address": {
        "phone": "+33 1 73 43 18 06",
        "state": "IDF",
        "country": "FR",
        "postalCode": "92092",
        "city": "Puteaux",
        "addressLine1": "Centre Commercial les 4 Temps 15",
        "addressLine2": null
      },
      "geoLocation": {
        "longitude": 2.239119,
        "latitude": 48.89052
      },
      "openingHours": {
        "sunday": {
          "startHours": "11",
          "startMinutes": "00",
          "endHours": "20",
          "endMinutes": "00"
        },
        "saturday": {
          "startHours": "10",
          "startMinutes": "00",
          "endHours": "20",
          "endMinutes": "30"
        },
        "friday": {
          "startHours": "10",
          "startMinutes": "00",
          "endHours": "20",
          "endMinutes": "30"
        },
        "thursday": {
          "startHours": "10",
          "startMinutes": "00",
          "endHours": "20",
          "endMinutes": "30"
        },
        "wednesday": {
          "startHours": "10",
          "startMinutes": "00",
          "endHours": "20",
          "endMinutes": "30"
        },
        "tuesday": {
          "startHours": "10",
          "startMinutes": "00",
          "endHours": "20",
          "endMinutes": "30"
        },
        "monday": {
          "startHours": "10",
          "startMinutes": "00",
          "endHours": "20",
          "endMinutes": "30"
        }
      },
      "distance": 23500.0,
      "sapShipToId": "0600110046",
      "sapPlantId": "3325"
    }
  ]
}
```

```

    }
  ],
  "shipments": [
    {
      "shipmentId": "7912fe8b-9710-383c-9be9-adb6d5efcfa2",
      "productLines": [
        {
          "id": "1",
          "sku": "H08837_500",
          "quantity": 2,
          "lineType": "inline"
        }
      ],
      "locationId": "9990047732",
      "shippingMethod": {
        "shippingMethodId": "99247271-b130-4eb3-9319-eb1f2b7a4de5",
        "customId": "shipToStore",
        "name": "Click & Collect",
        "description": "Click & Collect",
        "carrierName": "NONE",
        "carrierString": "shipToStore",
        "carrierService": "Standard",
        "taxClassId": "Undefined",
        "shippingMethodPrice": {
          "threshold": 23.0,
          "baseFixedPrice": 87.0,
          "shipmentUpsell": 11.0,
          "memberFixedPrices": {
            "tier1": 87.0,
            "tier2": 87.0,
            "tier3": 87.0,
            "tier4": 87.0
          }
        },
        "shipmentFixedPrice": 0.0,
        "shipmentPrice": 0.0
      },
      "expectedPickupDate": "2023-01-26T00:00:00.000Z"
    }
  ]
}

```

### PART 3 Location ID - 9990086654

```

{
  "fulfillmentType": "ClickAndCollect",
  "name": "Click And Collect",
  "description": "Click And Collect",
  "locations": [
    {
      "id": "9990086654",
      "locationName": "adidas Flagship Store Paris",
      "address": {
        "phone": "+33 1 73 43 18 06",
        "state": "IDF",
        "country": "FR",
        "postalCode": "75008",
        "city": "Paris",
        "addressLine1": "Avenue des Champs-Elysees 22",
        "addressLine2": null
      },
      "geoLocation": {
        "longitude": 2.309695,
        "latitude": 48.869133
      }
    }
  ]
}

```

```

    "openingHours": {
      "sunday": {
        "startHours": "10",
        "startMinutes": "00",
        "endHours": "20",
        "endMinutes": "30"
      },
      "saturday": {
        "startHours": "10",
        "startMinutes": "00",
        "endHours": "20",
        "endMinutes": "30"
      },
      "friday": {
        "startHours": "10",
        "startMinutes": "00",
        "endHours": "20",
        "endMinutes": "30"
      },
      "thursday": {
        "startHours": "10",
        "startMinutes": "00",
        "endHours": "20",
        "endMinutes": "30"
      },
      "wednesday": {
        "startHours": "10",
        "startMinutes": "00",
        "endHours": "20",
        "endMinutes": "30"
      },
      "tuesday": {
        "startHours": "10",
        "startMinutes": "00",
        "endHours": "20",
        "endMinutes": "30"
      },
      "monday": {
        "startHours": "10",
        "startMinutes": "00",
        "endHours": "20",
        "endMinutes": "30"
      }
    },
    "distance": 20613.0,
    "sapShipToId": "0600110052",
    "sapPlantId": "3326"
  }
],
"shipments": [
  {
    "shipmentId": "be041b10-0c3d-3c68-a751-a2c582dec3db",
    "productLines": [
      {
        "id": "1",
        "sku": "H08837_500",
        "quantity": 2,
        "lineType": "inline"
      }
    ]
  },
  "locationId": "9990086654",
  "shippingMethod": {
    "shippingMethodId": "99247271-b130-4eb3-9319-eb1f2b7a4de5",
    "customId": "shipToStore",
    "name": "Click & Collect",
    "description": "Click & Collect",
    "carrierName": "NONE",
    "carrierString": "shipToStore",
    "carrierService": "Standard",
    "taxClassId": "Undefined",
    "shippingMethodPrice": {

```

```

        "threshold": 23.0,
        "baseFixedPrice": 87.0,
        "shipmentUpsell": 11.0,
        "memberFixedPrices": {
            "tier1": 87.0,
            "tier2": 87.0,
            "tier3": 87.0,
            "tier4": 87.0
        },
        "shipmentFixedPrice": 0.0,
        "shipmentPrice": 0.0
    },
    "expectedPickupDate": "2023-01-26T00:00:00.000Z"
}
]
}

```

#### PART 4 Location ID - 9990000979

```

{
  "fulfillmentType": "ClickAndCollect",
  "name": "Click And Collect",
  "description": "Click And Collect",
  "locations": [
    {
      "id": "9990000979",
      "locationName": "adidas Store Roissy-en-France",
      "address": {
        "phone": "+33 1 73 43 18 06",
        "state": "IDF",
        "country": "FR",
        "postalCode": "95700",
        "city": "Roissy-en-France",
        "addressLine1": "Rue des Buissons 30",
        "addressLine2": null
      },
      "geoLocation": {
        "longitude": 2.521963,
        "latitude": 48.99127
      },
      "openingHours": {
        "sunday": {
          "startHours": "10",
          "startMinutes": "00",
          "endHours": "20",
          "endMinutes": "00"
        },
        "saturday": {
          "startHours": "10",
          "startMinutes": "00",
          "endHours": "20",
          "endMinutes": "00"
        },
        "friday": {
          "startHours": "10",
          "startMinutes": "00",
          "endHours": "20",
          "endMinutes": "00"
        },
        "thursday": {
          "startHours": "10",
          "startMinutes": "00",
          "endHours": "20",
          "endMinutes": "00"
        }
      }
    }
  ]
}

```



```

    },
    "wednesday": {
      "startHours": "10",
      "startMinutes": "00",
      "endHours": "20",
      "endMinutes": "00"
    },
    "tuesday": {
      "startHours": "10",
      "startMinutes": "00",
      "endHours": "20",
      "endMinutes": "00"
    },
    "monday": {
      "startHours": "10",
      "startMinutes": "00",
      "endHours": "20",
      "endMinutes": "00"
    }
  },
  "distance": 0.0,
  "sapShipToId": "0600110034",
  "sapPlantId": "3316"
},
"shipments": [
  {
    "shipmentId": "313aefbc-7d97-3c96-875c-c99780fce074",
    "productLines": [
      {
        "id": "1",
        "sku": "H08837_500",
        "quantity": 2,
        "lineType": "inline"
      }
    ],
    "locationId": "9990000979",
    "shippingMethod": {
      "shippingMethodId": "99247271-b130-4eb3-9319-eb1f2b7a4de5",
      "customId": "shipToStore",
      "name": "Click & Collect",
      "description": "Click & Collect",
      "carrierName": "NONE",
      "carrierString": "shipToStore",
      "carrierService": "Standard",
      "taxClassId": "Undefined",
      "shippingMethodPrice": {
        "threshold": 23.0,
        "baseFixedPrice": 87.0,
        "shipmentUpsell": 11.0,
        "memberFixedPrices": {
          "tier1": 87.0,
          "tier2": 87.0,
          "tier3": 87.0,
          "tier4": 87.0
        }
      },
      "shipmentFixedPrice": 0.0,
      "shipmentPrice": 0.0
    },
    "expectedPickupDate": "2023-01-26T00:00:00.000Z"
  },
  {
    "shipmentId": "98802054-cd2b-3ede-a34f-752b8bef1c2c",
    "productLines": [
      {
        "id": "1",
        "sku": "H08837_500",
        "quantity": 2,
        "lineType": "inline"
      }
    ]
  }
]

```

```

    ],
    "locationId": "9990086344",
    "shippingMethod": {
      "shippingMethodId": "99247271-b130-4eb3-9319-eb1f2b7a4de5",
      "customId": "shipToStore",
      "name": "Click & Collect",
      "description": "Click & Collect",
      "carrierName": "NONE",
      "carrierString": "shipToStore",
      "carrierService": "Standard",
      "taxClassId": "Undefined",
      "shippingMethodPrice": {
        "threshold": 23.0,
        "baseFixedPrice": 87.0,
        "shipmentUpsell": 11.0,
        "memberFixedPrices": {
          "tier1": 87.0,
          "tier2": 87.0,
          "tier3": 87.0,
          "tier4": 87.0
        },
        "shipmentFixedPrice": 0.0,
        "shipmentPrice": 0.0
      },
    },
    "expectedPickupDate": "2023-01-26T00:00:00.000Z"
  }
]
}

```

## PART 5 - Location ID - 9990086344

```

{
  "fulfillmentType": "ClickAndCollect",
  "name": "Click And Collect",
  "description": "Click And Collect",
  "locations": [
    {
      "id": "9990086344",
      "locationName": "adidas Brand Center Paris, Boulevard Haussmann",
      "address": {
        "phone": "+33 1 73 43 18 06",
        "state": "IDF",
        "country": "FR",
        "postalCode": "75009",
        "city": "Paris",
        "addressLine1": "Boulevard Haussmann 39-41",
        "addressLine2": null
      },
      "geoLocation": {
        "longitude": 2.3297825,
        "latitude": 48.873272
      },
      "openingHours": {
        "sunday": {
          "startHours": "11",
          "startMinutes": "00",
          "endHours": "19",
          "endMinutes": "00"
        },
        "saturday": {
          "startHours": "10",
          "startMinutes": "00",
          "endHours": "20",
          "endMinutes": "00"
        }
      }
    }
  ]
}

```

```

    },
    "friday": {
      "startHours": "10",
      "startMinutes": "00",
      "endHours": "20",
      "endMinutes": "00"
    },
    "thursday": {
      "startHours": "10",
      "startMinutes": "00",
      "endHours": "20",
      "endMinutes": "00"
    },
    "wednesday": {
      "startHours": "10",
      "startMinutes": "00",
      "endHours": "20",
      "endMinutes": "00"
    },
    "tuesday": {
      "startHours": "10",
      "startMinutes": "00",
      "endHours": "20",
      "endMinutes": "00"
    },
    "monday": {
      "startHours": "10",
      "startMinutes": "00",
      "endHours": "20",
      "endMinutes": "00"
    }
  },
  "distance": 19215.0,
  "sapShipToId": "0600110049",
  "sapPlantId": "3327"
}
],
"shipments": [
  {
    "shipmentId": "98802054-cd2b-3ede-a34f-752b8bef1c2c",
    "productLines": [
      {
        "id": "1",
        "sku": "H08837_500",
        "quantity": 2,
        "lineType": "inline"
      }
    ]
  },
  {
    "locationId": "9990086344",
    "shippingMethod": {
      "shippingMethodId": "99247271-b130-4eb3-9319-eb1f2b7a4de5",
      "customId": "shipToStore",
      "name": "Click & Collect",
      "description": "Click & Collect",
      "carrierName": "NONE",
      "carrierString": "shipToStore",
      "carrierService": "Standard",
      "taxClassId": "Undefined",
      "shippingMethodPrice": {
        "threshold": 23.0,
        "baseFixedPrice": 87.0,
        "shipmentUpsell": 11.0,
        "memberFixedPrices": {
          "tier1": 87.0,
          "tier2": 87.0,
          "tier3": 87.0,
          "tier4": 87.0
        }
      },
      "shipmentFixedPrice": 0.0,
      "shipmentPrice": 0.0
    }
  }
]

```

```

    },
    "expectedPickupDate": "2023-01-26T00:00:00.000Z"
  }
]
}

```

Instead of waiting 2.5 seconds to receive all 5 locations before the frontend can do anything, in the second example it can be optimised so that each location arrives after 0.5 seconds and the user can already see the closest store to him, which has the highest probability to be preferred by the user anyway. After 0.5 seconds, other store will arrive to frontend and will be populated so the second store will be visible for the user.

## Future Initiative

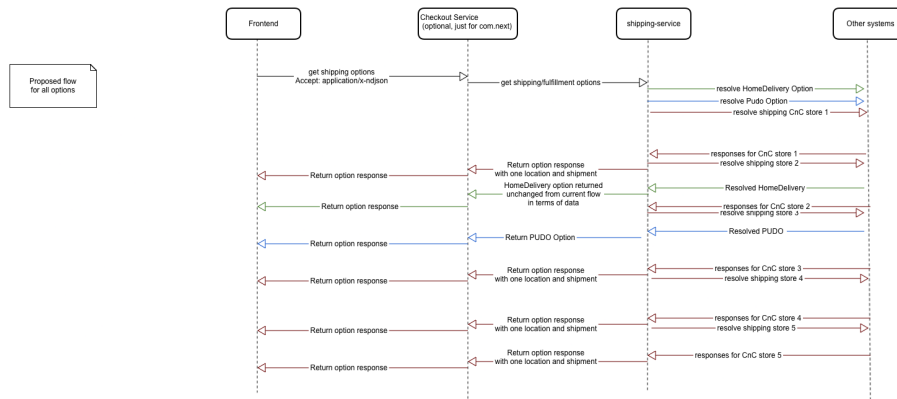
For the future, same thing can be achieved for PUDO responses.

HTTP2 can be supported and thus making this approach a little better performant then.

## Proposed flow for all options (behaviour of all options once the CnC option is implemented)

This is how requests are going to be resolved once the streaming content will be finished.

All 3 fulfillment types which require to be resolved are going to be started on shipping service at the same time. Usually, home delivery is finished first, with pudo coming second. For CnC the option response, it is going to be split containing one solution in each option, so multiple CnC options are going to be returned, one per each location/shipping.



## Technical Demo

Example: <https://github.com/joost-de-vries/ndjson>

As long as a response is an **array**, and it is implemented to be returned via a **Flux** object, if header will be **Accept:application/x-ndjson**, then backend will support streaming of the response.

Streaming means each element in the array/Flux will be returned as soon as it is resolved in the backend.

Backend or Frontend do not have to take care of explicitly specify which is the last element, it is taken care of within the protocol.

Same data will arrive also via application/json, same amount of information will be transferred, in same amount of time, still a single connection, only difference is the data will arrive in packets to the client so it can possible be offered a better user experience.

```
iholln0335:shipping-service alex$ curl -k --header 'Accept: application/x-ndjson' \
> --location 'https://localhost/sources/5'
```

```
6 import org.springframework.http.MediaType;
7 import org.springframework.web.bind.annotation.GetMapping;
8 import org.springframework.web.bind.annotation.PathVariable;
9 import org.springframework.web.bind.annotation.RestController;
10 import reactor.core.publisher.Flux;
11
12
13 no usages
14 @Slf4j
15 @RestController
16 public class ShippingOptionsController {
17
18     1 usage
19     @Autowired
20     private ShippingOptionsHandler sourceClient;
21
22     no usages
23     @GetMapping(value = @"/sources/{count}",
24                 produces = {MediaType.APPLICATION_NDJSON_VALUE,
25                             MediaType.APPLICATION_JSON_VALUE})
26     public Flux<ShippingOptionResponse> getShippingOptions(@PathVariable Integer count) {
27         return sourceClient.getSources(count);
28     }
29 }
```