

# Optimización de Consultas Distribuidas en PostgreSQL

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Repositorio de Github: [db2-distributed-optimization](#)

## P1. Creación de Tablas Fragmentadas

```
1 create schema lab15s;
2 set search_path to lab15s;
3
4 CREATE TABLE Venta (
5     IdVenta SERIAL NOT NULL,
6     DNI_Cliente INTEGER NOT NULL,
7     FechaVenta DATE NOT NULL,
8     CodLocal VARCHAR(10) NOT NULL,
9     ImporteTotal DECIMAL(10, 2) NOT NULL,
10    IdEmpleado INTEGER NOT NULL
11 ) PARTITION BY RANGE (FechaVenta);
12
13 CREATE TABLE Venta_menor_2022 PARTITION OF Venta FOR VALUES FROM
14     (MINVALUE) TO ('2022-01-01');
15 CREATE TABLE Venta_2022 PARTITION OF Venta FOR VALUES FROM
16     ('2022-01-01') TO ('2023-01-01');
17 CREATE TABLE Venta_2023 PARTITION OF Venta FOR VALUES FROM
18     ('2023-01-01') TO (MAXVALUE);
19
20 CREATE TABLE Reclamo (
21     IdReclamo SERIAL,
22     DNI_Cliente INTEGER NOT NULL,
23     FechaReclamo DATE NOT NULL,
24     CodLocal VARCHAR(10) NOT NULL,
25     Descripcion TEXT NOT NULL,
26     Estado VARCHAR(50) NOT NULL
27 ) PARTITION BY LIST (CodLocal);
28
29 CREATE TABLE Reclamo_Local_1_4 PARTITION OF Reclamo FOR VALUES IN
30     ('1', '2', '3', '4');
```

```
27 CREATE TABLE Reclamo_Local_5_8 PARTITION OF Reclamo FOR VALUES IN
    ('5', '6', '7', '8');
28 CREATE TABLE Reclamo_Local_9_12 PARTITION OF Reclamo FOR VALUES IN
    ('9', '10', '11', '12');
```

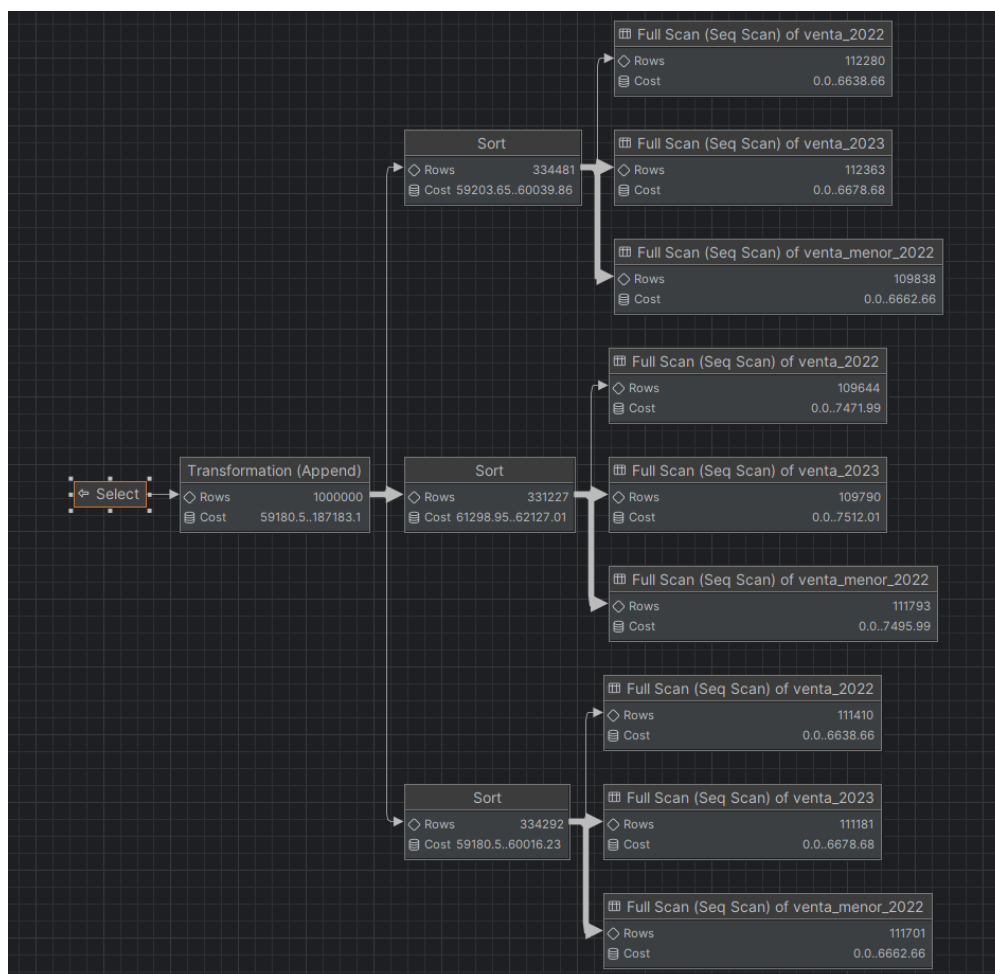
**Consulta 1**

```
1 SELECT * FROM (
2 SELECT * FROM (
3     SELECT V.*
4         FROM Venta_menor_2022 V
5         WHERE V.ImporteTotal >= 3000
6     UNION ALL
7     SELECT V.*
8         FROM Venta_2022 V
9         WHERE V.ImporteTotal >= 3000
10    UNION ALL
11    SELECT V.*
12        FROM Venta_2023 V
13        WHERE V.ImporteTotal >= 3000
14 ) AS venta3
15 ORDER BY ImporteTotal DESC
16 ) AS V3
17 UNION ALL
18
19 SELECT * FROM(
20 SELECT * FROM (
21     SELECT V.*
22         FROM Venta_menor_2022 V
23         WHERE V.ImporteTotal >= 2000 AND V.ImporteTotal < 3000
24     UNION ALL
25     SELECT V.*
26         FROM Venta_2022 V
27         WHERE V.ImporteTotal >= 2000 AND V.ImporteTotal < 3000
28     UNION ALL
29     SELECT V.*
30         FROM Venta_2023 V
31         WHERE V.ImporteTotal >= 2000 AND V.ImporteTotal < 3000
32 ) AS venta2
33 ORDER BY ImporteTotal DESC
34 ) AS V2
35
36 UNION ALL
37
38 SELECT * FROM (
39     SELECT * FROM (
40         SELECT V.*
41             FROM Venta_menor_2022 V
42             WHERE V.ImporteTotal < 2000
43         UNION ALL
44         SELECT V.*
45             FROM Venta_2022 V
```

```

46     WHERE V.ImporteTotal < 2000
47     UNION ALL
48     SELECT V.*
49     FROM Venta_2023 V
50     WHERE V.ImporteTotal < 2000
51
52 ) AS venta1
53 ORDER BY ImporteTotal DESC
54
55 ) AS V1;
56
57 select max(dni_cliente) from venta;
58
59 select min(dni_cliente) from venta;

```



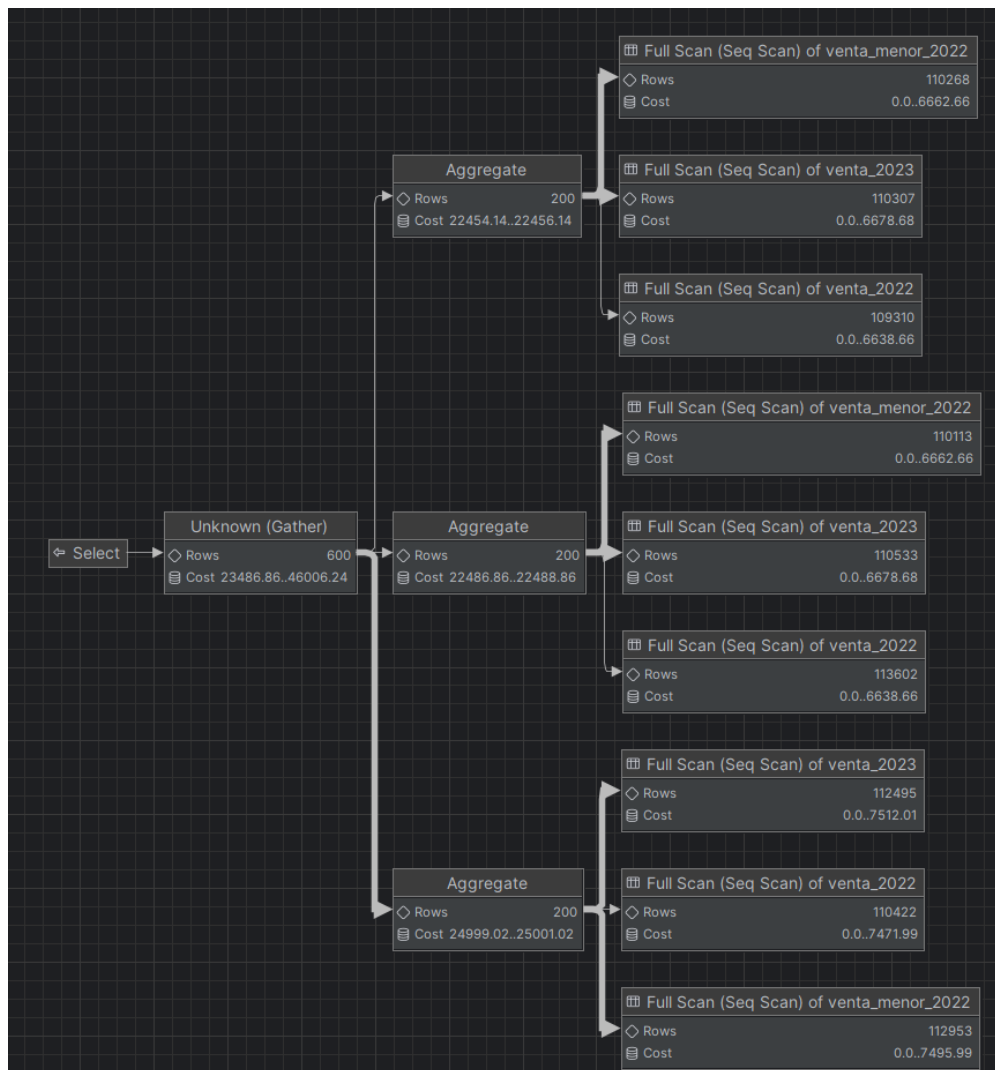
**Consulta 2**

```
1 SELECT *
2 FROM (
3
4     SELECT DISTINCT DNI_Cliente
5     FROM (
6         SELECT V.DNI_Cliente
7         FROM Venta_menor_2022 V
8         WHERE V.DNI_Cliente < 6666
9         UNION ALL
10        SELECT V.DNI_Cliente
11        FROM Venta_2022 V
12        WHERE V.DNI_Cliente < 6666
13        UNION ALL
14        SELECT V.DNI_Cliente
15        FROM Venta_2023 V
16        WHERE V.DNI_Cliente < 6666
17    ) AS venta1
18
19
20    UNION ALL
21
22    SELECT DISTINCT DNI_Cliente
23    FROM (
24        SELECT V.DNI_Cliente
25        FROM Venta_menor_2022 V
26        WHERE V.DNI_Cliente >= 6666 AND V.DNI_Cliente < 8333
27        UNION ALL
28        SELECT V.DNI_Cliente
29        FROM Venta_2022 V
30        WHERE V.DNI_Cliente >= 6666 AND V.DNI_Cliente < 8333
31        UNION ALL
32        SELECT V.DNI_Cliente
33        FROM Venta_2023 V
34        WHERE V.DNI_Cliente >= 6666 AND V.DNI_Cliente < 8333
35    ) AS venta2
36
37    UNION ALL
38
39    SELECT DISTINCT DNI_Cliente
40    FROM (
41        SELECT V.DNI_Cliente
42        FROM Venta_menor_2022 V
43        WHERE V.DNI_Cliente >= 8333
44        UNION ALL
45        SELECT V.DNI_Cliente
```

```

46      FROM Venta_2022 V
47      WHERE V.DNI_Cliente >= 8333
48      UNION ALL
49      SELECT V.DNI_Cliente
50      FROM Venta_2023 V
51      WHERE V.DNI_Cliente >= 8333
52  ) AS venta3
53
54  ) AS venta;

```



**Consulta 3**

```
1 SELECT *
2 FROM (
3     SELECT CodLocal, SUM(SI) / SUM(CV) AS PI
4     FROM (
5         SELECT CodLocal, SUM(ImporteTotal) AS SI, COUNT(*) AS CV
6         FROM (
7             SELECT V.CodLocal, V.ImporteTotal
8             FROM Venta_2023 V
9             WHERE V.CodLocal IN ('1', '2', '3', '4')
10            UNION ALL
11            SELECT V.CodLocal, V.ImporteTotal
12            FROM Venta_2022 V
13            WHERE V.CodLocal IN ('1', '2', '3', '4')
14            UNION ALL
15            SELECT V.CodLocal, V.ImporteTotal
16            FROM Venta_menor_2022 V
17            WHERE V.CodLocal IN ('1', '2', '3', '4')
18        ) AS v1
19        GROUP BY CodLocal
20    ) AS venta1
21    GROUP BY CodLocal
22
23    UNION ALL
24
25    SELECT CodLocal, SUM(SI) / SUM(CV) AS PI
26    FROM (
27        SELECT CodLocal, SUM(ImporteTotal) AS SI, COUNT(*) AS CV
28        FROM (
29            SELECT V.CodLocal, V.ImporteTotal
30            FROM Venta_2023 V
31            WHERE V.CodLocal IN ('5', '6', '7', '8')
32            UNION ALL
33            SELECT V.CodLocal, V.ImporteTotal
34            FROM Venta_2022 V
35            WHERE V.CodLocal IN ('5', '6', '7', '8')
36            UNION ALL
37            SELECT V.CodLocal, V.ImporteTotal
38            FROM Venta_menor_2022 V
39            WHERE V.CodLocal IN ('5', '6', '7', '8')
40        ) AS v2
41        GROUP BY CodLocal
42    ) AS venta2
43    GROUP BY CodLocal
44
45    UNION ALL
```

```

46
47 SELECT CodLocal, SUM(SI) / SUM(CV) AS PromedioImporte
48 FROM (
49     SELECT CodLocal, SUM(ImporteTotal) AS SI, COUNT(*) AS CV
50     FROM (
51         SELECT V.CodLocal, V.ImporteTotal
52         FROM Venta_2023 V
53         WHERE V.CodLocal IN ('9', '10', '11', '12')
54         UNION ALL
55         SELECT V.CodLocal, V.ImporteTotal
56         FROM Venta_2022 V
57         WHERE V.CodLocal IN ('9', '10', '11', '12')
58         UNION ALL
59         SELECT V.CodLocal, V.ImporteTotal
60         FROM Venta_menor_2022 V
61         WHERE V.CodLocal IN ('9', '10', '11', '12')
62     ) AS v3
63     GROUP BY CodLocal
64 ) AS venta3
65     GROUP BY CodLocal
66 ) AS resultF
67 ORDER BY CodLocal;

```





**Consulta 4**

```
1 SELECT *
2 FROM (
3     SELECT *
4     FROM (
5         SELECT R.*
6         FROM Reclamo_Local_1_4 R
7         WHERE R.DNI_Cliente < 6666
8         UNION ALL
9         SELECT R.*
10        FROM Reclamo_Local_5_8 R
11        WHERE R.DNI_Cliente < 6666
12        UNION ALL
13        SELECT R.*
14        FROM Reclamo_Local_9_12 R
15        WHERE R.DNI_Cliente < 6666
16    ) AS reclamo1
17    JOIN (
18        SELECT DNI_Cliente
19        FROM Venta_menor_2022 V
20        WHERE V.DNI_Cliente < 6666
21        UNION ALL
22        SELECT DNI_Cliente
23        FROM Venta_2022 V
24        WHERE V.DNI_Cliente < 6666
25        UNION ALL
26        SELECT DNI_Cliente
27        FROM Venta_2023 V
28        WHERE V.DNI_Cliente < 6666
29    ) AS venta1
30        ON reclamo1.DNI_Cliente = venta1.DNI_Cliente
31
32    UNION ALL
33
34    SELECT *
35    FROM (
36        SELECT R.*
37        FROM Reclamo_Local_1_4 R
38        WHERE R.DNI_Cliente >= 6666 AND R.DNI_Cliente <
39            8333
40        UNION ALL
41        SELECT R.*
42        FROM Reclamo_Local_5_8 R
43        WHERE R.DNI_Cliente >= 6666 AND R.DNI_Cliente <
44            8333
45        UNION ALL
```

```
44         SELECT R.*
45         FROM Reclamo_Local_9_12 R
46         WHERE R.DNI_Cliente >= 6666 AND R.DNI_Cliente <
           8333
47     ) AS reclamo2
48     JOIN (
49         SELECT DNI_Cliente
50         FROM Venta_menor_2022 V
51         WHERE V.DNI_Cliente >= 6666 AND V.DNI_Cliente < 8333
52         UNION ALL
53         SELECT DNI_Cliente
54         FROM Venta_2022 V
55         WHERE V.DNI_Cliente >= 6666 AND V.DNI_Cliente < 8333
56         UNION ALL
57         SELECT DNI_Cliente
58         FROM Venta_2023 V
59         WHERE V.DNI_Cliente >= 6666 AND V.DNI_Cliente < 8333
60     ) AS venta2
61         ON reclamo2.DNI_Cliente = venta2.DNI_Cliente
62
63 UNION ALL
64
65 SELECT *
66 FROM (
67     SELECT R.*
68     FROM Reclamo_Local_1_4 R
69     WHERE R.DNI_Cliente >= 8333
70     UNION ALL
71     SELECT R.*
72     FROM Reclamo_Local_5_8 R
73     WHERE R.DNI_Cliente >= 8333
74     UNION ALL
75     SELECT R.*
76     FROM Reclamo_Local_9_12 R
77     WHERE R.DNI_Cliente >= 8333
78 ) AS reclamo3
79     JOIN (
80     SELECT DNI_Cliente
81     FROM Venta_menor_2022 V
82     WHERE V.DNI_Cliente >= 8333
83     UNION ALL
84     SELECT DNI_Cliente
85     FROM Venta_2022 V
86     WHERE V.DNI_Cliente >= 8333
87     UNION ALL
88     SELECT DNI_Cliente
89     FROM Venta_2023 V
```

```

90         WHERE V.DNI_Cliente >= 8333
91     ) AS venta3
92         ON reclamo3.DNI_Cliente = venta3.DNI_Cliente
93 )AS result_v;

```

