

## Solving analytical queries on Redshift Cluster

### 1. Top 10 ATMs where most transactions are in the 'inactive' state

```
SELECT a.atm_id
      ,a.atm_manufacturer
      ,b.location
      ,count(d.trans_id) AS transaction_count
      ,count(d.atm_status) AS inactive_count
FROM atm_transaction.dim_atm a
      ,atm_transaction.dim_location b
      ,atm_transaction.FACT_ATM_TRANS d
WHERE d.atm_status = 'Inactive'
      AND d.atm_id = a.atm_id
      AND b.location_id = d.weather_loc_id
GROUP BY a.atm_id
      ,a.atm_manufacturer
      ,b.location
ORDER BY transaction_count DESC limit 10;
```

atm_id ▾	atm_manufacturer ▾	location ▾	transaction_count ▾	inactive_count ▾
22	NCR	Skive	44043	44043
18	NCR	Århus	33982	33982
26	NCR	Vejgaard	33725	33725
101	NCR	Storcenter indg. A	32183	32183
38	NCR	Nykøbing, bing Mors	30883	30883
62	NCR	Farsø	27361	27361
60	NCR	Aarhus	23416	23416
36	NCR	Skelagervej 15	20773	20773
94	NCR	Spar København, bmand Tørnholm	20148	20148
5	NCR	Aalborg Storcenter Afd	18297	18297

## 2. Number of ATM failures corresponding to the different weather conditions recorded at the time of the transactions

```
SELECT c.weather_main
      ,c.total_transaction_count
      ,NVL(d.inactive_count::INT, 0) AS inactive_count
      ,round(100.0 * inactive_count / c.total_transaction_count, 4) AS
inactive_count_percent
FROM (
      SELECT a.weather_main
            ,count(a.trans_id) AS total_transaction_count
      FROM atm_transaction.FACT_ATM_TRANS a
      WHERE a.weather_main != ' '
      GROUP BY a.weather_main
    ) c
LEFT OUTER JOIN (
      SELECT b.weather_main
            ,count(b.atm_status) AS inactive_count
      FROM atm_transaction.FACT_ATM_TRANS b
      WHERE b.atm_status = 'Inactive'
            AND b.weather_main != ' '
      GROUP BY b.weather_main
    ) d ON c.weather_main = d.weather_main
GROUP BY c.weather_main
      ,c.total_transaction_count
      ,inactive_count
ORDER BY inactive_count_percent DESC;
```

weather_main ▼	total_transaction_count ▼	inactive_count ▼	inactive_count_percent ▼
Haze	3	0	
Snow	23405	4813	20.5640
Fog	18174	3729	20.5183
Clouds	1181901	194027	16.4165
Rain	545135	86017	15.7790
Clear	543949	85531	15.7241
Mist	82801	12864	15.5360
Thunderstorm	2549	361	14.1624
Drizzle	62530	8670	13.8653
TORNADO	38	1	2.6316

### 3. Top 10 ATMs with the most number of transactions throughout the year

```
SELECT a.atm_number
      ,a.atm_manufacturer
      ,b.location
      ,count(d.trans_id) AS total_transaction_count
FROM atm_transaction.dim_atm a
      ,atm_transaction.dim_location b
      ,atm_transaction.FACT_ATM_TRANS d
WHERE d.atm_id = a.atm_id
      AND b.location_id = d.weather_loc_id
GROUP BY a.atm_id
        ,a.atm_number
        ,a.atm_manufacturer
        ,b.location
ORDER BY total_transaction_count DESC limit 10;
```

atm_number	atm_manufacturer	location	total_transaction_count
39	NCR	Svenstrup	55380
20	NCR	Bispensgade	54211
10	NCR	NÃfÂ, resundby	53794
24	NCR	Hobro	53378
45	NCR	Abildgaard	53198
16	NCR	Skive	44043
40	Diebold Nixdorf	Frederikshavn	43767
1	NCR	NÃfÂ, stved	42787
41	Diebold Nixdorf	Skagen	42732
48	Diebold Nixdorf	BrÃfÂ, nderslev	42493

#### 4. Number of overall ATM transactions going inactive per month for each month

```
SELECT c.year
      ,c.month
      ,c.total_transaction_count
      ,d.inactive_count
      ,round(100.0 * d.inactive_count / c.total_transaction_count, 4) AS
inactive_count_percent
FROM (
    SELECT a.year
          ,a.month
          ,count(b.trans_id) AS total_transaction_count
    FROM atm_transaction.dim_date a
          ,atm_transaction.FACT_ATM_TRANS b
    WHERE a.date_id = b.date_id
    GROUP BY a.month,a.year) c
LEFT JOIN (
    SELECT a.year
          ,a.month
          ,count(b.atm_status) AS inactive_count
    FROM atm_transaction.dim_date a
          ,atm_transaction.FACT_ATM_TRANS b
    WHERE a.date_id = b.date_id
          AND b.atm_status = 'Inactive'
    GROUP BY a.month,a.year
) d ON c.year = d.year
    AND c.month = d.month
ORDER BY c.year,c.month;
```

year ▼	month ▼	total_transaction_count ▼	inactive_count ▼	inactive_count_percent ▼
2017	April	218865	41830	19.1122
2017	August	217218	36713	16.9015
2017	December	197048	20476	10.3914
2017	February	182659	36656	20.0680
2017	January	180195	35953	19.9523
2017	July	227682	38139	16.7510
2017	June	225166	36789	16.3386
2017	March	209586	41046	19.5843
2017	May	222418	37679	16.9406
2017	November	193967	21684	11.1792
2017	October	191667	21780	11.3635
2017	September	202101	28913	14.3062

## 5. Top 10 ATMs with the highest total withdrawn amount throughout the year

```
SELECT a.atm_number
      ,a.atm_manufacturer
      ,b.location
      ,sum(d.transaction_amount) AS total_transaction_amount
FROM atm_transaction.dim_atm a
      ,atm_transaction.dim_location b
      ,atm_transaction.FACT_ATM_TRANS d
WHERE d.atm_id = a.atm_id
      AND b.location_id = d.weather_loc_id
GROUP BY a.atm_id
        ,a.atm_number
        ,a.atm_manufacturer
        ,b.location
ORDER BY total_transaction_amount DESC limit 10;
```

atm_number ▼	atm_manufacturer ▼	location ▼	total_transaction_amount ▼
39	NCR	Svenstrup	277097637
20	NCR	Bispensgade	271008803
24	NCR	Hobro	268289882
10	NCR	NÃfÂ, rresundby	267379103
45	NCR	Abildgaard	265639616
16	NCR	Skive	220677013
40	Diebold Nixdorf	Frederikshavn	219812287
41	Diebold Nixdorf	Skagen	214127315
1	NCR	NÃfÂstved	213721117
48	Diebold Nixdorf	BrÃfÂ, nderslev	212883099

## 6. Number of failed ATM transactions across various card types

```
SELECT a.card_type
      ,a.total_transaction_count
      ,b.inactive_count
      ,round(100.0 * b.inactive_count / a.total_transaction_count, 4) AS
inactive_count_percent
FROM (
      SELECT c.card_type
            ,count(d.trans_id) AS total_transaction_count
      FROM atm_transaction.dim_card_type c
            ,atm_transaction.FACT_ATM_TRANS d
      WHERE c.card_type_id = d.card_type_id
      GROUP BY c.card_type
    ) a
LEFT JOIN (
      SELECT c.card_type
            ,count(d.atm_status) AS inactive_count
      FROM atm_transaction.dim_card_type c
            ,atm_transaction.FACT_ATM_TRANS d
      WHERE c.card_type_id = d.card_type_id
            AND d.atm_status = 'Inactive'
      GROUP BY c.card_type
    ) b ON a.card_type = b.card_type
ORDER BY inactive_count_percent DESC;
```

card_type ▼	total_transaction_count ▼	inactive_count ▼	inactive_count_percent ▼
Mastercard - on-us	458226	86000	18.7680
VISA	170828	30713	17.9789
Dankort - on-us	143813	24680	17.1612
CIRRUS	17362	2953	17.0084
HÃfÃvekort - on-us	62487	10331	16.5330
Dankort	28581	4557	15.9442
MasterCard	400507	63482	15.8504
Visa Dankort - on-us	748805	112972	15.0870
HÃfÃvekort	8459	1208	14.2806
Visa Dankort	427840	60547	14.1518
VisaPlus	1134	150	13.2275
Maestro	530	65	12.2642

7. Number of transactions happening on an ATM on weekdays and on weekends throughout the year. Order this by the ATM\_number, ATM\_manufacturer, location, weekend\_flag and then total\_transaction\_count

```
SELECT a.atm_number
      ,a.atm_manufacturer
      ,b.location
      ,CASE WHEN c.weekday IN ('Sunday','Saturday') THEN '1'
             ELSE '0' END AS weekend_flag
      ,count(d.trans_id) AS total_transaction_count
FROM atm_transaction.dim_atm a
      ,atm_transaction.dim_location b
      ,atm_transaction.dim_date c
      ,atm_transaction.FACT_ATM_TRANS d
WHERE d.atm_id = a.atm_id
      AND b.location_id = d.weather_loc_id
      AND c.date_id = d.date_id
GROUP BY a.atm_id
        ,a.atm_number
        ,a.atm_manufacturer
        ,b.location
        ,weekend_flag
ORDER BY a.atm_id ASC
        ,weekend_flag ASC limit 10;
```

atm_number ▾	atm_manufacturer ▾	location ▾	weekend_flag ▾	total_transaction_count ▾
1	NCR	NÃfÃ'stved	0	32711
1	NCR	NÃfÃ'stved	1	10076
10	NCR	NÃfÃ,rresundby	0	41667
10	NCR	NÃfÃ,rresundby	1	12127
100	NCR	Intern Skive	0	17812
100	NCR	Intern Skive	1	1
101	NCR	Bryggen Vejle	0	11693
101	NCR	Bryggen Vejle	1	3247
102	NCR	Aalborg Storcenter Afd	0	14556
102	NCR	Aalborg Storcenter Afd	1	3741

## 8. Most active day in each ATMs from location "Vejgaard"

```

SELECT atm_number
      ,atm_manufacturer
      ,location
      ,weekday
      ,total_transaction_count
FROM (
    SELECT atm_number
          ,atm_manufacturer
          ,location
          ,weekday
          ,total_transaction_count
          ,max(total_transaction_count) OVER (PARTITION BY atm_id) AS
max_version
    FROM (
        SELECT a.atm_number
              ,a.atm_id
              ,a.atm_manufacturer
              ,b.location
              ,c.weekday
              ,count(d.trans_id) AS total_transaction_count
        FROM atm_transaction.dim_atm a
              ,atm_transaction.dim_location b
              ,atm_transaction.dim_date c
              ,atm_transaction.FACT_ATM_TRANS d
        WHERE d.atm_id = a.atm_id
              AND b.location_id = d.weather_loc_id
              AND b.location = 'Vejgaard'
              AND c.date_id = d.date_id
        GROUP BY a.atm_number
              ,a.atm_id
              ,a.atm_manufacturer
              ,b.location
              ,c.weekday
    ) c
    ) t
WHERE total_transaction_count = max_version;

```

atm_number ▾	atm_manufacturer ▾	location ▾	weekday ▾	total_transaction_count ▾
2	NCR	Vejgaard	Friday	6290
103	Diebold Nixdorf	Vejgaard	Friday	4757