

# Analytical queries on Redshift Cluster

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

```
WITH inactive AS (  
    -- Calculate the count of inactive ATMs  
    SELECT  
        atm_id,  
        COUNT(1) AS inactive_number  
    FROM  
        atm_data.fact_atm_trans  
    WHERE  
        atm_status = 'Inactive'  
    GROUP BY  
        atm_id  
) ,  
inactive_2 AS (  
    -- Join inactive ATMs with ATM details  
    SELECT  
        *  
    FROM  
        inactive  
    LEFT JOIN  
        atm_data.dim_atm USING (atm_id)  
) ,  
inactive_3 AS (  
    -- Further join with location details and calculate  
    dense rank  
    SELECT  
        atm_number,  
        location_id,  
        inactive_number,  
        location,  
        streetname,  
        street_number,  
        DENSE_RANK() OVER (ORDER BY inactive_number DESC)  
    AS RANK  
    FROM  
        inactive_2 i  
    LEFT JOIN
```

```

        atm_data.dim_location a ON i.atm_location_id =
a.location_id
    )
-- Select top 10 inactive ATMs based on rank
SELECT
    *
FROM
    inactive_3
WHERE
    RANK <= 10;

```

Redshift query editor v2

Filter resources

Tables

- dim\_atm
- dim\_card\_type
- dim\_date
- dim\_location**
- fact\_atm\_trans

Views: 0

Functions: 0

Run

Limit 100

Explain

Isolated session

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dev

Schedule

Export

Chart

Result 1 (10)

atm_number	location_id	inactive_number	location	streetname	street_number
16	56	44043	Inlern Skive	Adelgade	8
12	108	33982	ÅrEosterÅrÅr Duus	ÅrEosterÅrÅr	12
2	103	33725	Voigaard	Hadsundvej	20
88	91	32183	Storcenter indg. A	Hobrovej	452
30	72	30883	NykÅrÅ,bing Mors	Kirkelovet	1
52	24	27361	FarsÅrÅ,	Torvet	8
50	7	23416	Aarhus	SÅrÅ,nder Alle	11
29	84	20773	Skelagervej 15	Skelagervej	15
81	90	20148	Spar KÅrÅ,mand Tomh...	TomhÅrÅ,jvej	4
102	3	18297	Aalborg Storcenter Afrd	Hobrovej	452

Row 112, Col 1, Chr 3565

dim\_location

Field	Type	NL	CMP
location_id	Integer	NN	none
location	character varying(60)	NULL	izo
streetname	character varying(200)	NULL	izo
street_number	Integer	NULL	az64
zipcode	Integer	NULL	az64
lat	numeric(10,3)	NULL	az64

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

```
WITH weather AS (  
    -- Select weather data for inactive ATMs  
    SELECT *  
    FROM atm_data.fact_atm_trans  
    WHERE atm_status = 'Inactive'  
)  
-- Count occurrences of each weather condition for  
inactive ATMs  
SELECT  
    weather_main,  
    COUNT(*) AS inactive_weather_count  
FROM  
    weather  
GROUP BY  
    weather_main  
ORDER BY  
    inactive_weather_count DESC;
```

The screenshot displays the Redshift query editor v2 interface. On the left, a sidebar shows a list of tables including dim\_atm, dim\_card\_type, dim\_date, dim\_location, and fact\_atm\_trans. The main editor area contains a SQL query that filters for inactive ATMs and counts the number of transactions for each weather condition. The query is as follows:

```
1 with weather as (select * from atm_data.fact_atm_trans  
2 where atm_status='Inactive')  
3 select weather_main, count(*) as inactive_weather_count from weather  
4 group by weather_main order by inactive_weather_count desc ;  
5  
6  
7  
8  
9
```

Below the query editor, the results are displayed in a table format. The table has two columns: weather\_main and inactive\_weather\_count. The results are sorted in descending order of the count.

weather_main	inactive_weather_count
Clouds	194027
Rain	86017
Clear	85531
Mist	12864
Drizzle	8670
Snow	4813
Fog	3729

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

```
WITH top10 AS (  
    -- Calculate total transactions and assign rank to each ATM  
    SELECT  
        atm_id,  
        COUNT(trans_id) AS total_transaction,  
        DENSE_RANK() OVER (ORDER BY total_transaction DESC) AS  
Rank  
    FROM  
        atm_data.fact_atm_trans  
    GROUP BY  
        atm_id  
)  
-- Select top 10 ATMs and retrieve location details  
SELECT  
    atm_number,  
    location,  
    streetname,  
    total_transaction  
FROM  
    top10  
LEFT JOIN  
    atm_data.dim_atm USING (atm_id)  
LEFT JOIN  
    atm_data.dim_location l ON dim_atm.atm_location_id =  
l.location_id  
WHERE  
    Rank <= 10  
ORDER BY  
    total_transaction DESC;
```

Redshift query editor v2

CreateLoad data

Filter resources

Tables5

dim\_atm

dim\_card\_type

dim\_date

dim\_location

fact\_atm\_trans

Views0

Functions0

dim atm

Distribution key: atm\_id

Sort key: atm\_id

Sort type: Compound

	Field	Type	NL	CMP
	atm_id	integer	NN	none
A	atm_number	character varying(20)	NULL	lzo
A	atm_manufacturer	character varying(60)	NULL	lzo
	atm_location_id	integer	NULL	az64

Untitled 1Untitled 2

RunLimit 100ExplainIsolated sessioneti-sn-bank-atmdevSchedule

```
7
8
9 with top10 as (select atm_id, count(trans_id) as total_transaction,
10 dense_rank() over (order by total_transaction desc) as Rank
11 from atm_data.fact_atm_trans
12 group by atm_id)
13 select atm_number, location, streetname, total_transaction
14 from top10 left join atm_data.dim_atm using(atm_id) left join atm_data.dim_location l on dim_atm.atm_location_id=l.location_id
15 where rank<=10
16 order by total_transaction desc
17
18
19
20
21
22
```

Result 1 (10)

atm_number	location	streetname	total_transaction
39	Svenstrup	Godthåbsvej	55380
20	Bispensgade	Bispensgade	54211
10	NÅresundby	Torvet	53794
24	Hobro	Adelgade	53378
45	Abildgaard	HjÅrningvej	53198
16	Intern Skive	Adelgade	44043
40	Frederikshavn	Danmarksgade	43767
1	NÅstved	Farimagvej	42787
41	Skagen	Sct. Laurentivej	42732
48	BrÅnderslev	Ålgade	42493

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

```
SELECT
    year,
    month,
    COUNT(trans_id) AS
total_inactive_transaction_count
FROM
    atm_data.fact_atm_trans
LEFT JOIN
    atm_data.dim_date USING (date_id)
WHERE
    atm_status = 'Inactive'
GROUP BY
    year,
    Month;
```

8  
9  
0  
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5  
6  
7  
8  
9  
0

```
select year,month,count(trans_id) as total_inactive__transaction_count  
from atm_data.fact_atm_trans left join atm_data.dim_date using(date_id)  
where atm_status='inactive'  
group by year,month  
;
```

Result 1 (12)

year	month	total_inactive__transac...	
2017	June	36789	
2017	September	28913	
2017	November	21684	
2017	January	35953	
2017	February	36656	
2017	March	41046	
2017	April	41830	
2017	May	37679	
2017	July	38139	
2017	August	36713	
2017	October	21780	
2017	December	20476	

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

```
WITH top10 AS (  
    -- Calculate total sum of transaction amounts and  
    assign rank to each ATM  
    SELECT  
        atm_id,  
        SUM(transaction_amount) AS total_sum_transaction,  
        DENSE_RANK() OVER (ORDER BY total_sum_transaction  
DESC) AS Rank  
    FROM  
        atm_data.fact_atm_trans  
    GROUP BY  
        atm_id  
)  
-- Select top 10 ATMs and retrieve location details  
SELECT  
    atm_number,  
    location,  
    streetname,  
    total_sum_transaction  
FROM  
    top10  
LEFT JOIN  
    atm_data.dim_atm USING (atm_id)  
LEFT JOIN  
    atm_data.dim_location l ON dim_atm.atm_location_id =  
l.location_id  
WHERE  
    Rank <= 10  
ORDER BY  
    total_sum_transaction DESC;
```



```

with top10 as(select atm_id,sum(transaction_amount) as total_sum_transaction,
dense_rank() over (order by total_sum_transaction desc) as Rank
from atm_data.fact_atm_trans
group by atm_id)
select atm_number,location,streetname,total_sum_transaction
from top10 left join atm_data.dim_atm using(atm_id) left join atm_data.dim_location l on dim_atm.atm_location_id=l.location_id
where rank<=10
order by total_sum_transaction desc
;

```

Result 1 (10)

Export ▾

atm_number	location	streetname	total_sum_transaction	
39	Svenstrup	GodthÃfÃbsvej	277097637	
20	Bispensgade	Bispensgade	271008803	
24	Hobro	Adelgade	268289882	
10	NÃfÃresundby	Torvet	267379103	
45	Abildgaard	HjÃfÃringvej	265639616	
16	Intern Skive	Adelgade	220677013	
40	Frederikshavn	Danmarksgade	219812287	
41	Skagen	Sct. Laurentiivej	214127315	
1	NÃfÃstved	Farimagsvej	213721117	
48	BrÃfÃnderslev	Algade	212883099	

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

```
SELECT
    card_type,
    COUNT(trans_id) AS total_failed_transaction
FROM
    atm_data.fact_atm_trans
LEFT JOIN
    atm_data.dim_card_type USING (card_type_id)
WHERE
    atm_status = 'Inactive'
GROUP BY
    card_type
ORDER BY
    total_failed_transaction DESC;
```

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▶ Run

Limit 100

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```
select card_type, count(trans_id) as total_failed_transaction
from atm_data.fact_atm_trans left join atm_data.dim_card_type using(card_type_id)
where atm_status='inactive'
group by card_type
order by total_failed_transaction desc
;
```

Result 1 (12)

<input type="checkbox"/>	card_type	total_failed_transaction	
<input type="checkbox"/>	Visa Dankort - on-us	112972	
<input type="checkbox"/>	Mastercard - on-us	86000	
<input type="checkbox"/>	MasterCard	63482	
<input type="checkbox"/>	Visa Dankort	60547	
<input type="checkbox"/>	VISA	30713	
<input type="checkbox"/>	Dankort - on-us	24680	
<input type="checkbox"/>	HÃfÃ¸vekort - on-us	10331	
<input type="checkbox"/>	Dankort	4557	
<input type="checkbox"/>	CIRRUS	2953	
<input type="checkbox"/>	HÃfÃ¸vekort	1208	
<input type="checkbox"/>	VisaPlus	150	
<input type="checkbox"/>	Maestro	65	

**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**

```
WITH weekday_weekend AS (  
    -- Assign a flag for weekday and weekend  
    SELECT  
        date_id,  
        CASE WHEN weekday IN ('Saturday', 'Sunday') THEN 1 ELSE  
0 END AS weekday_weekend_flag  
    FROM  
        atm_data.dim_date  
)  
-- Select transaction details and count total transactions for  
each ATM  
SELECT  
    atm.ATM_number,  
    atm.ATM_manufacturer,  
    loc.location,  
    wd.weekday_weekend_flag,  
    COUNT(t.trans_id) AS total_transaction_count  
FROM  
    atm_data.fact_atm_trans t  
LEFT JOIN  
    atm_data.dim_atm atm USING (atm_id)  
LEFT JOIN  
    weekday_weekend wd USING (date_id)  
LEFT JOIN  
    atm_data.dim_location loc ON loc.location_id =  
t.weather_loc_id  
GROUP BY  
    atm.ATM_number,  
    atm.ATM_manufacturer,  
    loc.location,  
    wd.weekday_weekend_flag  
ORDER BY  
    atm.ATM_number,  
    atm.ATM_manufacturer,  
    loc.location,  
    wd.weekday_weekend_flag,  
    total_transaction_count;
```

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dim\_atm table

Run

Limit 100

Explain

Isolated session

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Schedule

```
75 RENAME COLUMN atm_manufacturer TO atm_manufacturer;
76
77
78
79
80
81 with weekday_weekend as (select date_id,
82   case when weekday in ('Saturday','Sunday') then 1 else 0 end as weekday_weekend_flag
83   from atm_data.dim_date)
84 select ATM_number, ATM_manufacturer, location, weekday_weekend_flag , count(trans_id) as total_transaction_count
85 from atm_data.fact_atm_trans t left join atm_data.dim_atm using(atm_id) left join weekday_weekend using(date_id) left join atm_data.dim_location dd on dd.location_id=t.weather_loc_id
86 group by ATM_number, ATM_manufacturer, location, weekday_weekend_flag
87 order by ATM_number, ATM_manufacturer, location, weekday_weekend_flag,total_transaction_count
88
89
90
91
92
93
```

Result 1 (100)

Export

Chart

<input type="checkbox"/>	atm_number	atm_manufacturer	location	weekday_weekend_flag	total_transaction_count	
<input type="checkbox"/>	1	NCR	NÅfÅstved	0	32711	
<input type="checkbox"/>	1	NCR	NÅfÅstved	1	10076	
<input type="checkbox"/>	10	NCR	NÅfÅresundby	0	41667	
<input type="checkbox"/>	10	NCR	NÅfÅresundby	1	12127	
<input type="checkbox"/>	100	NCR	Intern Skive	0	17812	

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

```
WITH ranks AS (  
    SELECT DISTINCT  
        atm_id,  
        atm_number,  
        location,  
        weekday,  
        COUNT(trans_id) AS total_transaction_count,  
        ROW_NUMBER() OVER (PARTITION BY atm_id  
ORDER BY COUNT(trans_id) DESC) AS highest  
    FROM  
        atm_data.fact_atm_trans f  
    LEFT JOIN  
        atm_data.dim_atm USING (atm_id)  
    LEFT JOIN  
        atm_data.dim_location al ON  
f.weather_loc_id = al.location_id  
    LEFT JOIN  
        atm_data.dim_date USING (date_id)  
    WHERE  
        location = 'Vejgaard'  
    GROUP BY  
        weekday,  
        atm_id,  
        atm_number,  
        location  
)  
SELECT * FROM ranks WHERE highest = 1;
```

+

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Untitled 2 x

dim\_atm table x

▶ Run

Limit 100

Explain

Isolated session

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98 with ranks as (

select distinct(atm\_id),atm\_number,location, weekday,count(trans\_id) as total\_transaction\_count,

99 row\_number() over (PARTITION by atm\_id order by count(trans\_id) desc) as highest

100 from atm\_data.fact\_atm\_trans f left join atm\_data.dim\_atm using(atm\_id)

101 left join atm\_data.dim\_location al on f.weather\_loc\_id=al.location\_id left join atm\_data.dim\_date using(date\_id)

102 where location='Vejgaard'

103 group by weekday,atm\_id,atm\_number,location

104 )

105 select \* from ranks where highest=1;

106

107

108

109

Result 1 (2)

Ex

<input type="checkbox"/>	atm_id	atm_number	location	weekday	total_transaction_count
<input type="checkbox"/>	10	103	Vejgaard	Friday	4757
<input type="checkbox"/>	39	2	Vejgaard	Friday	6290