## **Dynamic Data Masking**

1. Create schema to contain user tables

```
Publish A Query plan

CREATE SCHEMA Datas;

GC
```

2. Create table with masked columns

```
CREATE TABLE Datas.Memberships (

MemberID INT IDENTITY(1, 1) NOT NULL,

FirstName VARCHAR(100) MASKED WITH (FUNCTION = 'partial(1, "xxxxx", 1)') NULL,

LastName VARCHAR(100) NOT NULL,

Phone VARCHAR(12) MASKED WITH (FUNCTION = 'default()') NULL,

Email VARCHAR(100) MASKED WITH (FUNCTION = 'email()') NOT NULL,

DiscountCode SMALLINT MASKED WITH (FUNCTION = 'random(1, 100)') NULL,

BirthDay DATETIME MASKED WITH (FUNCTION = 'default()') NULL
);
```

3. Insert sample data

```
INSERT INTO Datas.Memberships (FirstName, LastName, Phone, Email, DiscountCode, BirthDay)
VALUES
('Roberto', 'Tamburello', '555.123.4567', 'RTamburello@contoso.com', 10, '1985-01-25 03:25:05'),
('Janice', 'Galvin', '555.123.4568', 'JGalvin@contoso.com.co', 5, '1990-05-14 11:30:00'),
('Shakti', 'Menon', '555.123.4570', 'SMenon@contoso.net', 50, '2004-02-29 14:20:10'),
('Zheng', 'Mu', '555.123.4569', 'ZMu@contoso.net', 40, '1990-03-01 06:00:00');
```

4. Create schema to contain service tables

```
CREATE SCHEMA Services;
GO
```

5. Create service table with masked columns

```
CREATE TABLE Services.Feedbacks (
    MemberID INT IDENTITY(1, 1) NOT NULL,
    Feedback VARCHAR(100) MASKED WITH (FUNCTION = 'default()') NULL,
    Rating INT MASKED WITH (FUNCTION = 'default()'),
    Received_On DATETIME
);
```

6. Insert sample data

```
INSERT INTO Services.Feedbacks (Feedback, Rating, Received_On)
VALUES
    ('Good', 4, '2022-01-25 11:25:05'),
    ('Excellent', 5, '2021-12-22 08:10:07'),
    ('Average', 3, '2021-09-15 09:00:00');
```

7. Create different users in the database

```
CREATE USER ServiceAttendants WITHOUT LOGIN;
GO

CREATE USER ServiceLeads WITHOUT LOGIN;
GO

CREATE USER ServiceManagers WITHOUT LOGIN;
GO

CREATE USER ServiceHeads WITHOUT LOGIN;
GO
```

8. Grant read permissions to the users in the database

```
EXEC sp_addrolemember 'db_datareader','ServiceAttendants';

EXEC sp_addrolemember 'db_datareader','ServiceLeads';

EXEC sp_addrolemember 'db_datareader','ServiceManagers';

EXEC sp_addrolemember 'db_datareader','ServiceHeads';
```

9. Grant different UNMASK permissions to users

```
--Grant column level UNMASK permission to ServiceAttendant
GRANT UNMASK ON Datas.Memberships(FirstName) TO ServiceAttendants;

-- Grant table level UNMASK permission to ServiceLead
GRANT UNMASK ON Datas.Memberships TO ServiceLeads;

-- Grant schema level UNMASK permission to ServiceManager
GRANT UNMASK ON SCHEMA::Datas TO ServiceManagers;
GRANT UNMASK ON SCHEMA::Services TO ServiceManagers;

--Grant database level UNMASK permission to ServiceHead;
GRANT UNMASK TO ServiceHeads;
```

10. Query the data under the context of user 'ServiceAttendants'

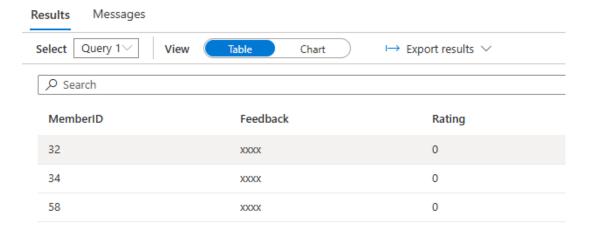
```
EXECUTE AS USER = 'ServiceAttendants';

SELECT MemberID, FirstName, LastName, Phone, Email, BirthDay
FROM Datas.Memberships;

SELECT MemberID, Feedback, Rating
FROM Services.Feedbacks;

REVERT;
```

| Results Messages |                    |            |       |               | ^              |
|------------------|--------------------|------------|-------|---------------|----------------|
| View Table Chart | → Export results ∨ |            |       |               |                |
|                  |                    |            |       |               |                |
| MemberID         | FirstName          | LastName   | Phone | Email         | BirthDay       |
| 9                | Roberto            | Tamburello | XXXX  | RXXX@XXXX.com | 1900-01-01T00: |
| 40               | Zheng              | Mu         | XXXX  | ZXXX@XXXX.com | 1900-01-01T00: |
| 46               | Shakti             | Menon      | XXXX  | SXXX@XXXX.com | 1900-01-01T00: |
| 53               | Janice             | Galvin     | XXXX  | JXXX@XXXX.com | 1900-01-01T00: |



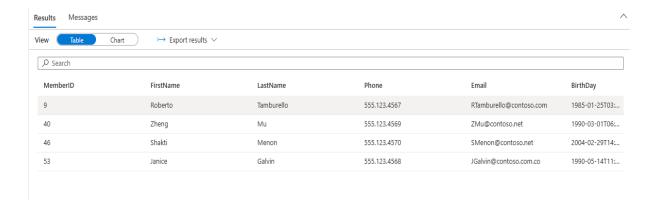
11. Query the data under the context of user 'ServiceLeads'

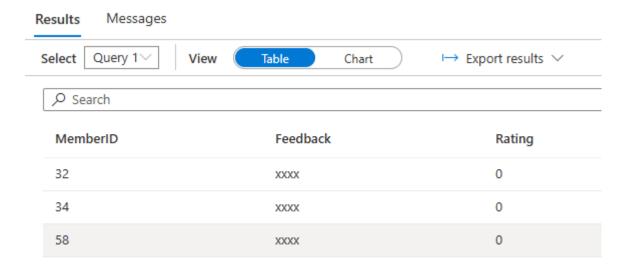
```
EXECUTE AS USER = 'ServiceLeads';

SELECT MemberID, FirstName, LastName, Phone, Email, BirthDay
FROM Datas.Memberships;

SELECT MemberID, Feedback, Rating
FROM Services.Feedbacks;

REVERT;
```





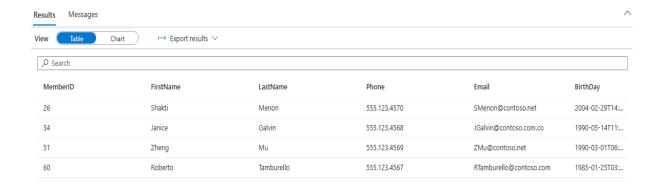
12. Query the data under the context of user 'ServiceManagers'

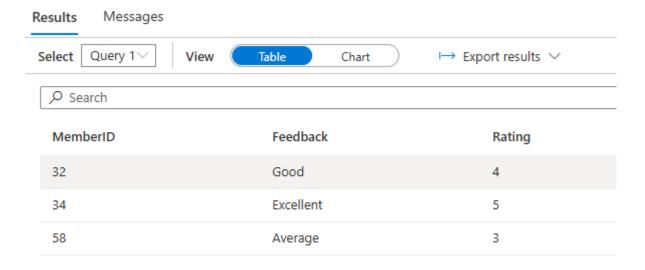
```
EXECUTE AS USER = 'ServiceManagers';

SELECT MemberID, FirstName, LastName, Phone, Email, BirthDay
FROM Datas.Memberships;

SELECT MemberID, Feedback, Rating
FROM Services.Feedbacks;

REVERT;
```





13. Query the data under the context of user 'ServiceHeads'

```
EXECUTE AS USER = 'ServiceHeads';

SELECT MemberID, FirstName, LastName, Phone, Email, BirthDay
FROM Datas.Memberships;

SELECT MemberID, Feedback, Rating
FROM Services.Feedbacks;

REVERT;
```

