

Dynamic Data Masking

1. Create schema to contain user tables

Run Undo | Publish Query plan

```
1 CREATE SCHEMA Datas;  
2 GO
```

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

Search

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:...

Results

Messages

Select

Query 1

View

Table

Chart

Export results

Search

MemberID	Feedback	Rating
32	xxxx	0
34	xxxx	0
58	xxxx	0

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;
```

Results

Messages

View

Table

Chart

↗

Export results

🔍

Search

MemberID	FirstName	LastName	Phone	Email	BirthDay
9	Roberto	Tamburello	555.123.4567	RTamburello@contoso.com	1985-01-25T03:...
40	Zheng	Mu	555.123.4569	ZMu@contoso.net	1990-03-01T06:...
46	Shakti	Menon	555.123.4570	SMenon@contoso.net	2004-02-29T14:...
53	Janice	Galvin	555.123.4568	JGalvin@contoso.com.co	1990-05-14T11:...

Results

Messages

Select

Query 1

View

Table

Chart

Export results

Search

MemberID	Feedback	Rating
32	XXXX	0
34	XXXX	0
58	XXXX	0

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;
```

Results

Messages

View

Table

Chart

Export results

Search

MemberID	FirstName	LastName	Phone	Email	BirthDay
26	Shakti	Menon	555.123.4570	SMenon@contoso.net	2004-02-29T14:...
34	Janice	Galvin	555.123.4568	JGalvin@contoso.com.co	1990-05-14T11:...
51	Zheng	Mu	555.123.4569	ZMu@contoso.net	1990-03-01T06:...
60	Roberto	Tamburello	555.123.4567	RTamburello@contoso.com	1985-01-25T03:...

Results Messages

Select

Query 1 ▾

View

Table

Chart

↗ Export results ▾

🔍 Search

MemberID	Feedback	Rating
32	Good	4
34	Excellent	5
58	Average	3

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;
```

Results Messages

View

Table

Chart

↗ Export results ▾

🔍 Search

MemberID	FirstName	LastName	Phone	Email	BirthDay
9	Roberto	Tamburello	555.123.4567	RTamburello@contoso.com	1985-01-25T03:...
40	Zheng	Mu	555.123.4569	ZMu@contoso.net	1990-03-01T06:...
46	Shakti	Menon	555.123.4570	SMenon@contoso.net	2004-02-29T14:...
53	Janice	Galvin	555.123.4568	JGalvin@contoso.com.co	1990-05-14T11:...

Search

MemberID	Feedback	Rating
32	Good	4
34	Excellent	5
58	Average	3