
SECURE DATA
SHARING

- Data Sharing
- Hands on demo

  Sharing with SF account user

  Sharing with non SF account user(using reader account)

  Data Sharing via UI

Secure Data Sharing

Secure Data Sharing

Secure Data Sharing enables account-to-account sharing of data through Snowflake database tables, secure views, and secure UDFs

- All database objects shared between accounts are read-only (i.e. the objects cannot be modified or deleted, including adding or modifying table data).
- Data sharing is currently only supported between accounts in the same region.
- All sharing is accomplished through Snowflake's unique services layer and metadata store.

What is a Share?

Shares are named Snowflake objects that encapsulate all of the information required to share a database.

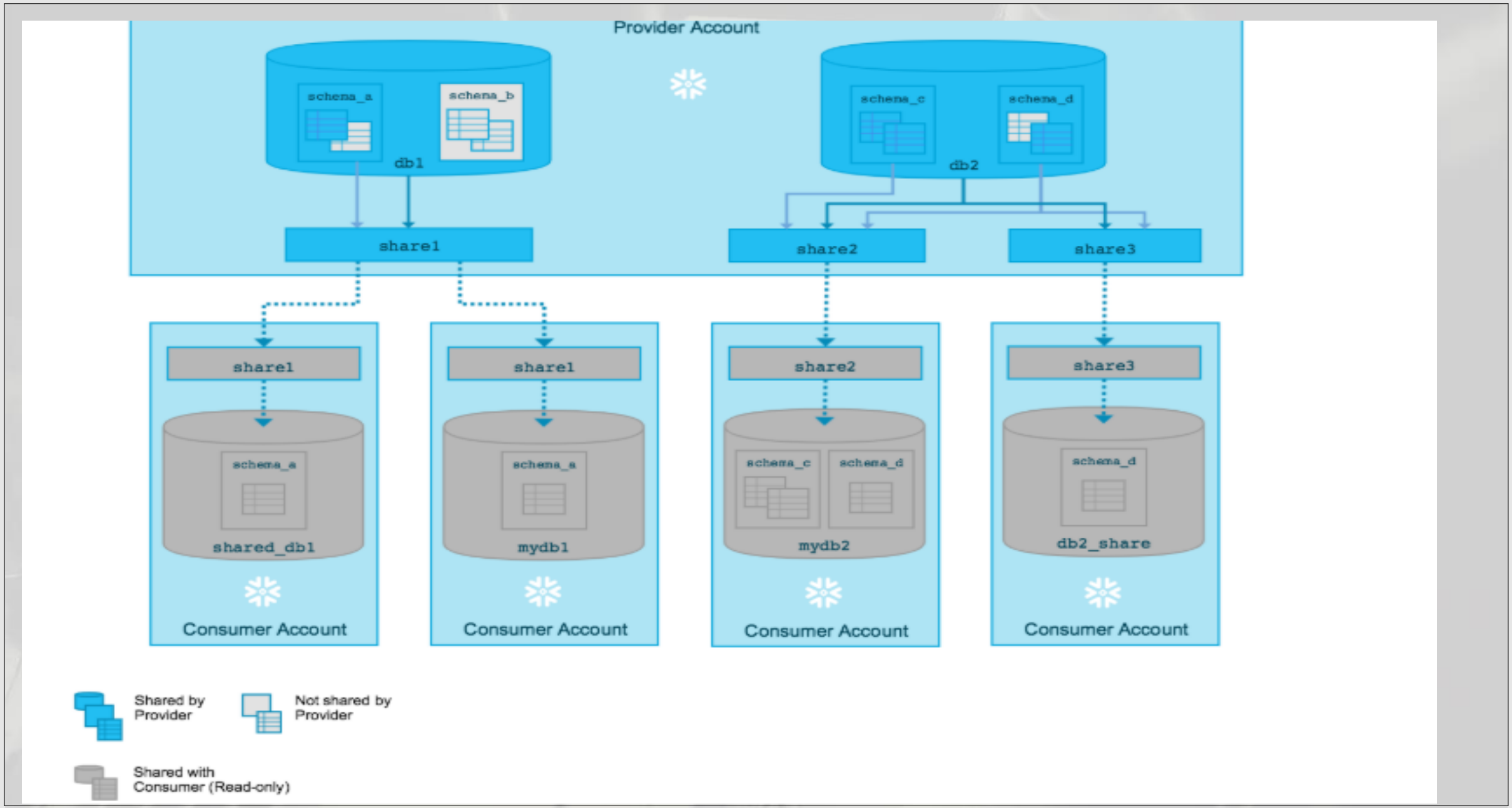
Each share consists of:
The privileges that grant access to the database(s) and the schema containing the objects to share.

The privileges that grant access to the specific objects (tables, secure views, and secure UDFs).

The consumer accounts with which the database and its objects are shared.

New objects added to a share become immediately available to all consumers, providing real-time access to shared data.

Access to a share (or any of the objects in a share) can be revoked at any time.


Provider Account
schema_a
schema_b
db1
schema_c
schema_d
db2
share1
share2
share3
share1
schema_a
shared_db1
Consumer Account
share1
schema_a
mydb1
Consumer Account
share2
schema_c
schema_d
mydb2
Consumer Account
share3
schema_d
db2_share
Consumer Account
Shared by Provider
Not shared by Provider
Shared with Consumer (Read-only)

Providers

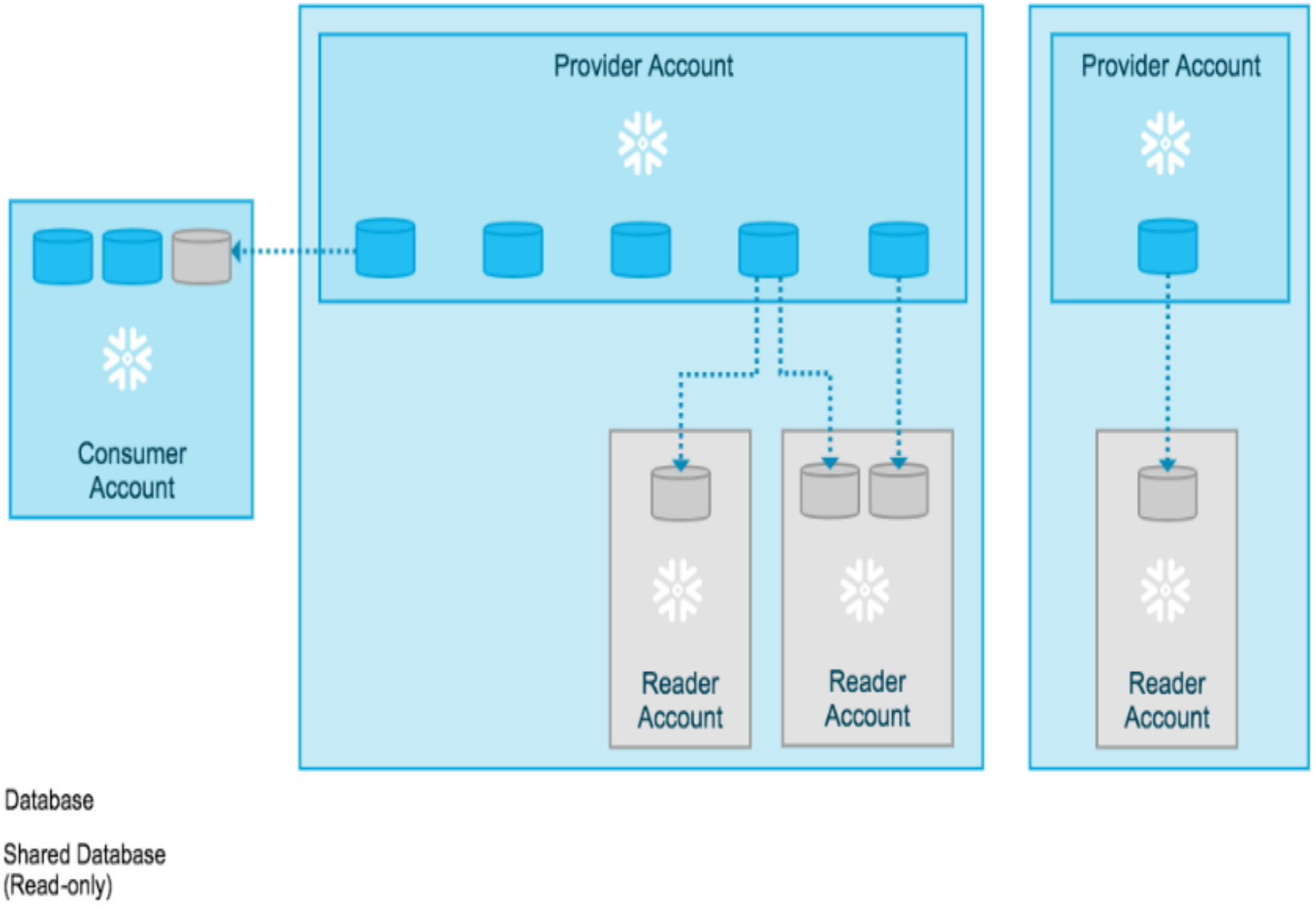
A data provider is any Snowflake account that creates shares and makes them available to other Snowflake accounts to consume.

Consumers

A data consumer is any account that chooses to create a database from a share made available by a data provider.

Reader Accounts

Data sharing is only supported between Snowflake accounts. As a data provider, you might wish to share data with a consumer who does not already have a Snowflake account and/or is not ready to become a licensed Snowflake customer.
Reader accounts provide a quick, easy, and cost-effective way to share data without requiring the consumer to become a Snowflake customer.


Provider Account
Provider Account
Consumer Account
Reader Account
Reader Account
Reader Account
Database
Shared Database (Read-only)

Secure Data Sharing STEP by STEP:

Step 1: Create a Share

Step 2: Add Objects to the Share by Granting Privileges
USAGE privilege on the database you wish to share.

USAGE privilege on each database schema containing the objects you wish to share.

SELECT privilege for sharing specific objects (tables, secure views, and secure UDFs) in each shared schema.

Step 3: Add One or More Accounts to the Share

Use ALTER SHARE to add one or more accounts to the share.

Hands on demo

Sharing with SF account user

Sharing with non SF account user(using reader account)

Data Sharing via UI

QUIZ

Objects shared between accounts can be modified by Consumer if granted previledges

a. True
b. False

Answer :False

Data sharing is

a. Supported between accounts in the same region.
b. Supported between accounts in the same region.
c. Account to account share
d. Accomplished by creating named Snowflake objects aka Share

Answer : a,c,d

https://fm87864.ap-south-1.aws.snowflakecomputing.com/
What is account name here

a. fm87864
b. fm87864.ap-south-1
c. fm87864.ap-south-1.aws
d. fm87864.ap-south-1.aws.snowflakecomputing.com

Answer : a


SNOWFLAKE ACCESS
MANAGEMENT

- Roles and Hierarchy in Snowflake
- System Usage & Billing

Roles and Hierarchy in Snowflake

Securable object:
An entity to which access can be granted. Unless allowed by a grant, access will be denied.

Role:
An entity to which privileges can be granted. Roles are in turn assigned to users. Note that roles can also be assigned to other roles, creating a role hierarchy.

Privilege:
A defined level of access to an object. Multiple distinct privileges may be used to control the granularity of access granted.

User:
A user identity recognized by Snowflake, whether associated with a person or program.

System-Defined Roles

ACCOUNTADMIN
It is the top-level role in the system and should be granted only to a limited/controlled number of users in your account.
Role that encapsulates the SYSADMIN and SECURITYADMIN system-defined roles.

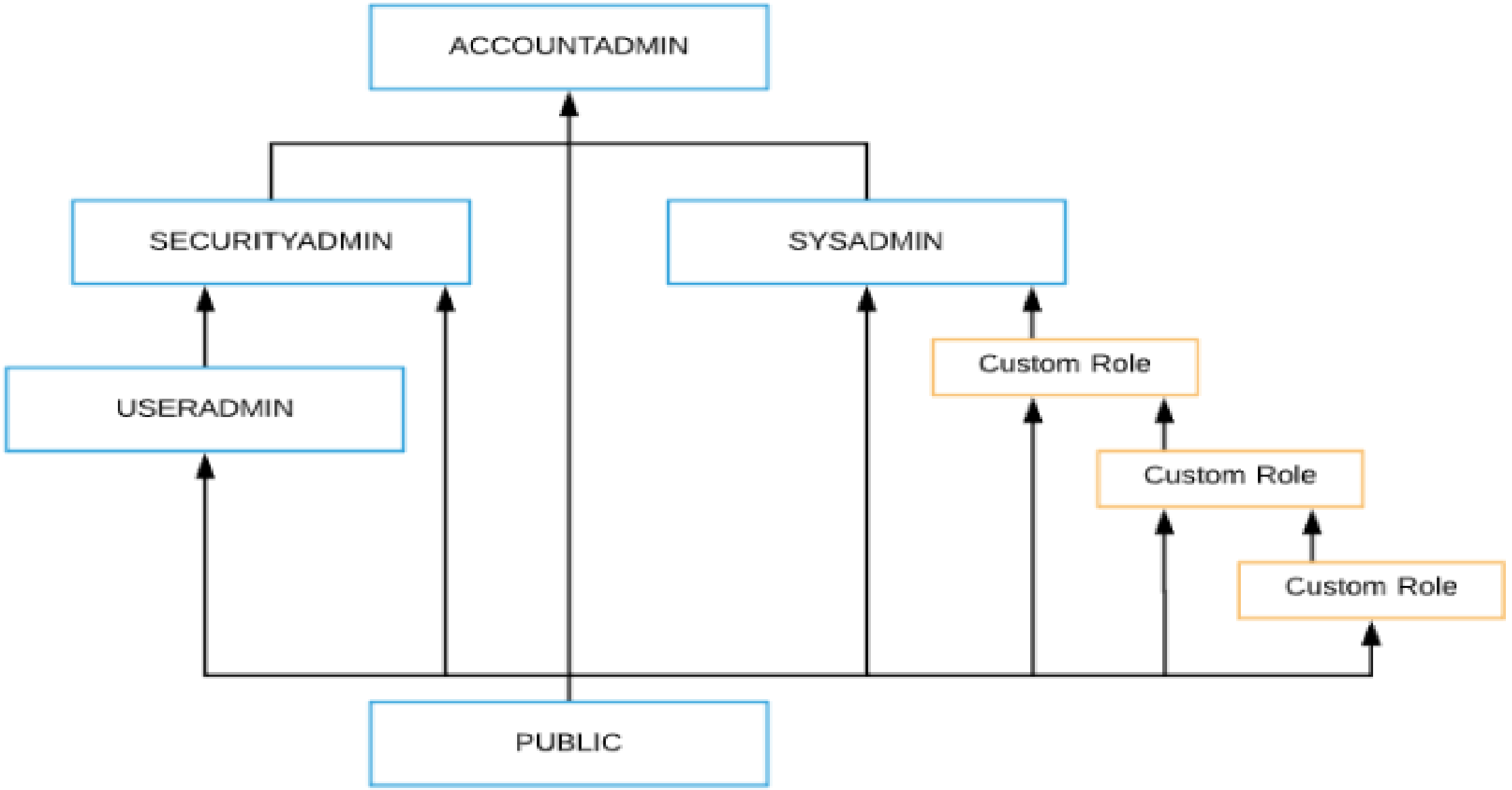
SECURITYADMIN
Role that can monitor, and manage users and roles.
Modify and monitor any user, role, or session.
Modify any grant, including revoking it.

USERADMIN
Role that can create users and roles

SYSADMIN
Role that has privileges to create warehouses and databases (and other objects) in an account.
This role also has the ability to grant privileges on warehouses, databases, and other objects to other roles.

PUBLIC
Pseudo-role that is automatically granted to every user and every role in your account
The PUBLIC role can own securable objects, just like any other role; however, the objects owned by the role are, by definition, available to every other user and role in your account.

Custom ROLES
Custom roles (i.e. any roles other than the system-defined roles) can be created by the SECURITYADMIN roles as well as by any role to which the CREATE ROLE privilege has been granted.


ACCOUNTADMIN
SECURITYADMIN
SYSADMIN
USERADMIN
Custom Role
Custom Role
Custom Role
PUBLIC

Example :
Role 3 has been granted to Role 2.

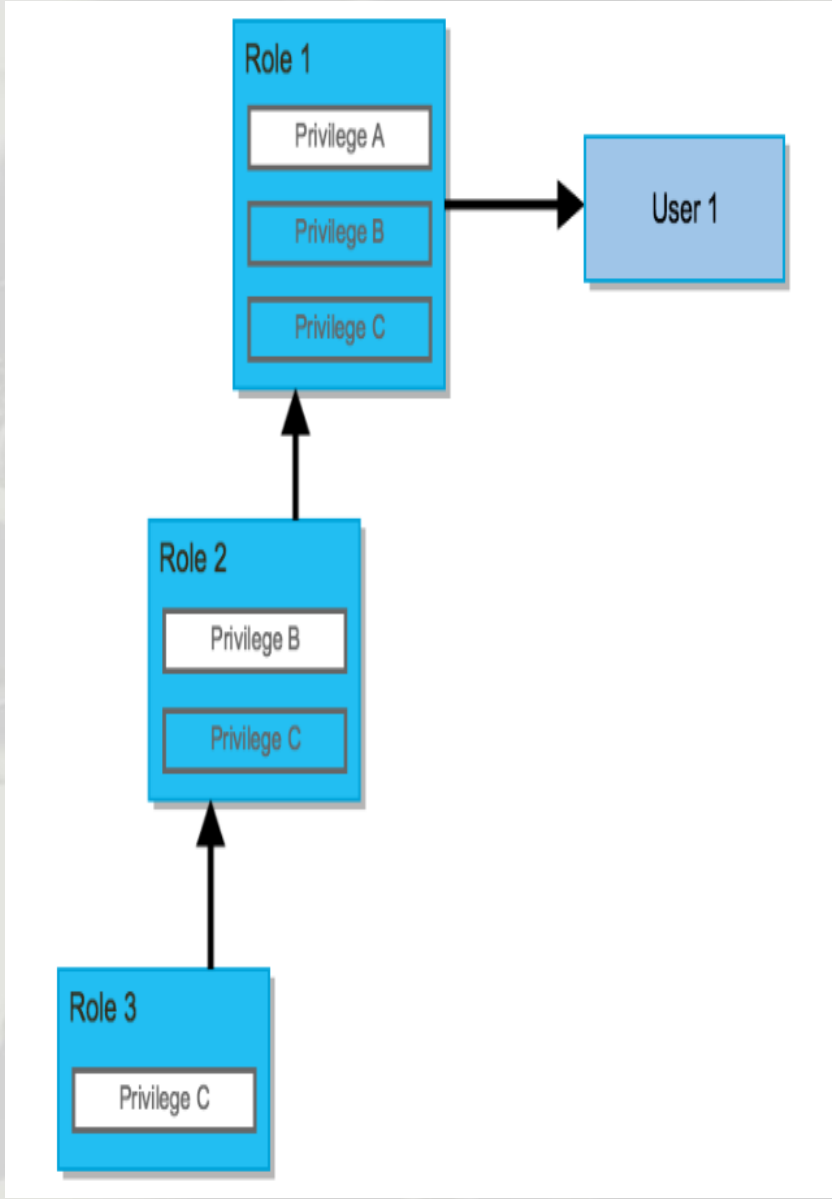
Role 2 has been granted to Role 1.

Role 1 has been granted to User 1

Role 2 inherits Privilege C.

Role 1 inherits Privileges B and C.

User 1 has all three privileges.



System Usage & Billing

System Usage & Billing

All Snowflake costs are based on usage **of data storage, virtual warehouses (compute) resources, and cloud services**

Usage for data storage is calculated on the daily average amount of data (in bytes) stored in the system for:

- Files staged for bulk data loading/unloading (can be stored compressed or uncompressed).
- Database tables, including historical data for Time Travel (always compressed by Snowflake).
- Fail-safe for database tables (always compressed by Snowflake).
- Clones of database tables that reference data deleted in the table that owns the clones.

Usage for virtual warehouses (compute) resources is calculated based on the number of Snowflake credits consumed by virtual warehouses for executing queries, loading/unloading data, and performing other DML operations.

Usage for cloud services is charged only if the daily consumption of cloud services for the account exceeds 10% of the daily usage of the compute resources

Snowflake Credits

A Snowflake credit is a unit of measure, and it is consumed only when a customer is using resources, such as when a virtual warehouse is running, the cloud services layer is performing work, or server less features are used.

Virtual Warehouse Credit Usage

X-Small	Small	Medium	Large	X-Large	2X-Large	3X-Large	4X-Large
1	2	4	8	16	32	64	128

Warehouses are only billed for credit usage when they are running. When a warehouse is suspended, it does not accrue any credit usage.

The credit numbers shown here are for a full hour of usage; however, credits are billed per-second, with a 60-second (i.e. 1-minute) minimum:

Each time a warehouse is started or resized to a larger size, the warehouse is billed for 1 minute's worth of usage based on the hourly rate shown above.

After 1 minute, all subsequent billing is per-second.

Viewing Warehouse Credit Usage for Your Account

Hands On Demo : Credit usage

Cloud Services Credit Usage

The cloud services layer is a collection of services that coordinate activities across Snowflake
Among the services in this layer:

- Authentication
- Infrastructure management
- Metadata management
- Query parsing and optimization
- Access control

Understanding Billing for Cloud Services Usage

If cloud services consumption is less than 10% of compute credits on a given day, then the adjustment for that day is equal to the cloud services the customer used

Date	Compute Credits	Credits Cloud Services	Credits Adjustment for Included Cloud Services (Minimum of Cloud Services or 10% of Compute)	Credits Billed (the sum of Compute, Cloud Services, and Adjustment)
Nov 1	100	20	-10	110
Nov 2	120	10	-10	120
Nov 3	80	5	-5	80
Nov 4	100	13	-10	103
Total	**400**	**48**	**-35**	**413**

Hands ON Demo : Find out Where Your Cloud Services Usage is Coming From

Data Storage Usage

Data storage is calculated monthly based on the average number of on-disk bytes for all data stored each day in your Snowflake account, including:

- Files stored in Snowflake locations (i.e. user and table stages or internal named stages) for bulk data loading/unloading. The user who stages a file can choose whether or not to compress the file to reduce storage.

- Data stored in database tables, including historical data maintained for Time Travel. Snowflake automatically compresses all data stored in tables and uses the compressed file size to calculate the total storage used for an account.

- Historical data maintained for Fail-safe.

Viewing Data Usage for Your Account

Hands On Demo : Credit usage

Snowflake Data Transfer Billing

Cloud providers apply data egress charges in either of the following use cases:

- Data is transferred from one region to another within the same cloud platform.
- Data is transferred out of the cloud platform.

To recover these expenses, Snowflake charges a per-byte fee when users transfer data from your Snowflake account (hosted on AWS, Google Cloud Platform, or Microsoft Azure) into cloud storage in another region on the same cloud platform, or into cloud storage in another cloud platform.

Data Transfer is applicable :
Unloading data to cloud storage in a region or cloud platform different from where your Snowflake account is hosted.

Checking data transfer history

Hands On Demo : DataTransferHistory

QUIZ

The cloud services layer includes below services

a. Authentication,Infrastructure management,Metadata management
b. Authentication,Infrastructure management,Metadata management,Warehouse
c. Authentication,Infrastructure management,Metadata management,Acess Control
d. Authentication,Infrastructure management,Metadata Management,Acess Control and Query optimization

Answer :d

SF Credits for virtual warehouses (compute) resources are calculated based on :

a. Services like authentication, Optimization, Metadata management
b. Executing queries, loading/unloading data, and performing other DML operationsS3 Storage bucket
c. Storage consumed by Databases and tables
d. Just for Executing queries

Answer : b

An entity to which privileges can be granted

a. Role
b. Object
c. Previlege
d. User

Answer : a

Role that can monitor, and manage users and roles

a. Account Admin
b. Security Admin
c. Public
d. Sys Admin

Answer : b

Recap

Snowflake Access Management

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