

A grayscale photograph of a man with dark hair, wearing large over-ear headphones. He is sitting at a desk, looking intently at a laptop screen. His hands are clasped together under his chin, suggesting a state of deep concentration or contemplation. The background is blurred, showing what appears to be an office or server room environment with some equipment and lights. Overlaid on the center of the image is the text "SNOWFLAKE ACCESS MANAGEMENT" in a large, white, serif font.

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.

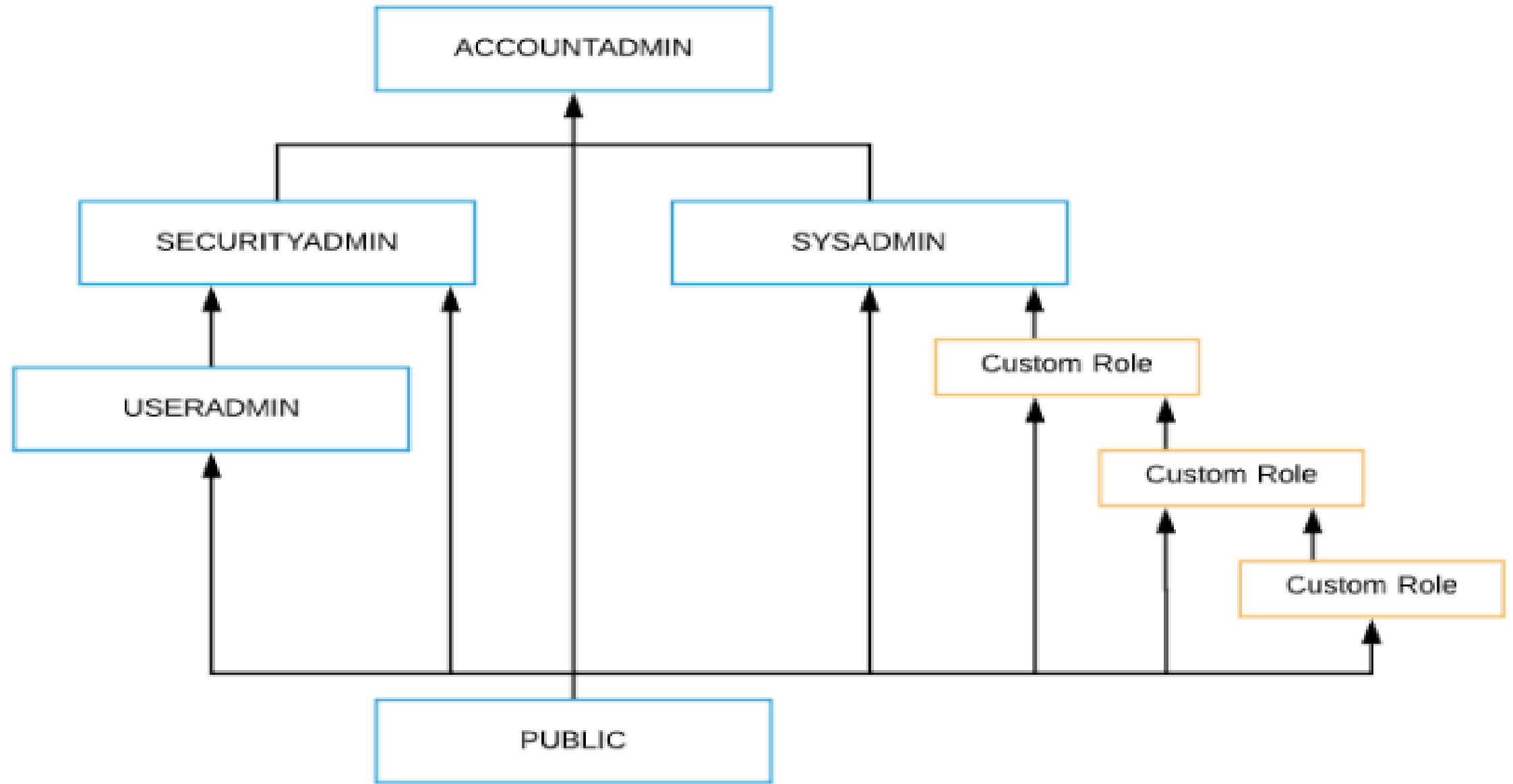
PUBLIC

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.



Example :

Role 3 has been granted to Role 2.

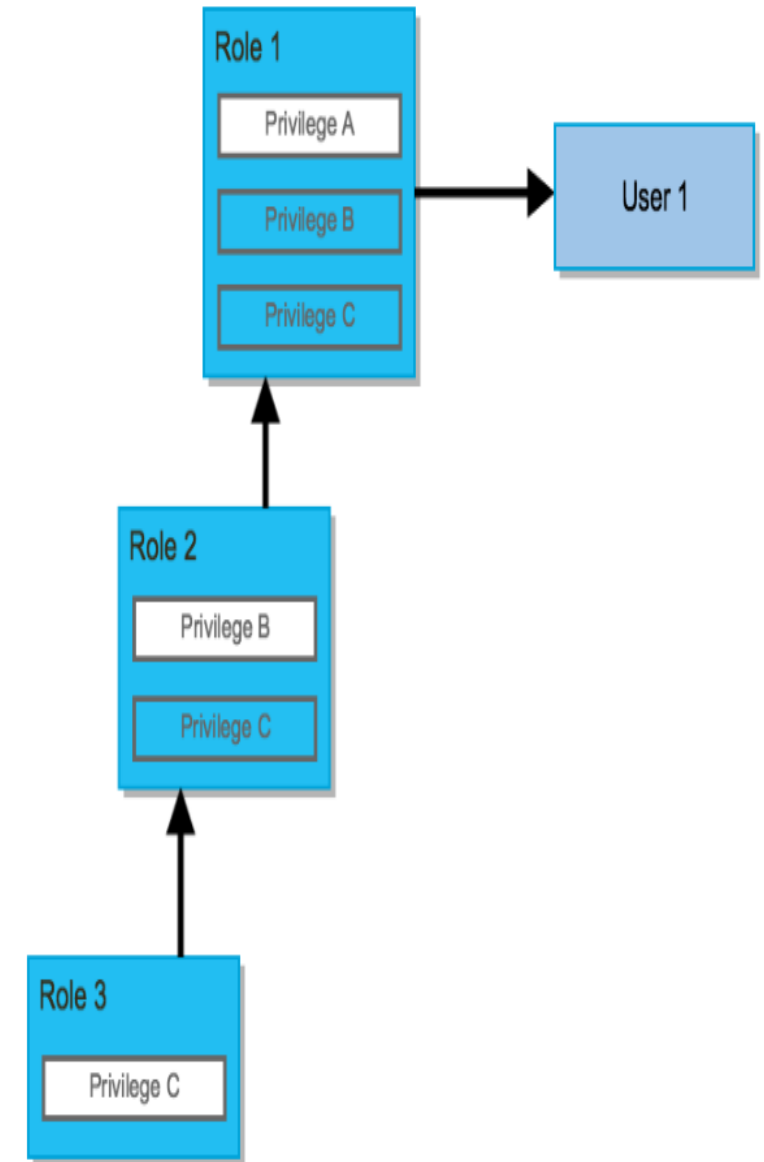
Role 2 has been granted to Role 1.

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:

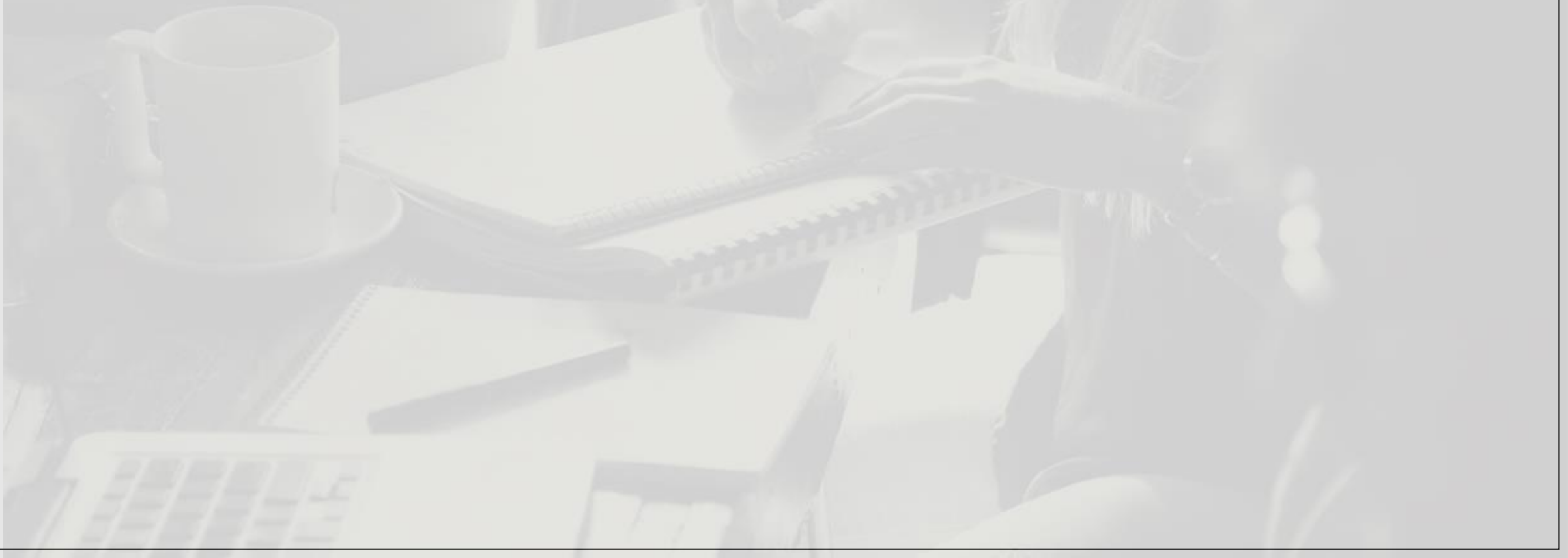
- Files staged for bulk data loading/unloading (can be stored compressed or uncompressed).
- Database tables, including historical data for Time Travel (always compressed by Snowflake).
- Fail-safe for database tables (always compressed by Snowflake).
- Clones of database tables that reference data deleted 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, Access Control
- d. Authentication, Infrastructure management, Metadata Management, Access 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 operations
- c. Storage consumed by Databases and tables
- d. Just for Executing queries

Answer : b

A background image showing two people sitting at a desk. On the left, a person is looking at a laptop. On the right, a person is writing on a document. The desk has a laptop, a coffee cup, a notebook, and a contract labeled 'Contract'.

An entity to which privileges can be granted

- a. Role
- b. Object
- c. Privilege
- 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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Cloud Services Credit Usage

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Authentication, Infrastructure management, Metadata management, Query parsing and optimization & Access control

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