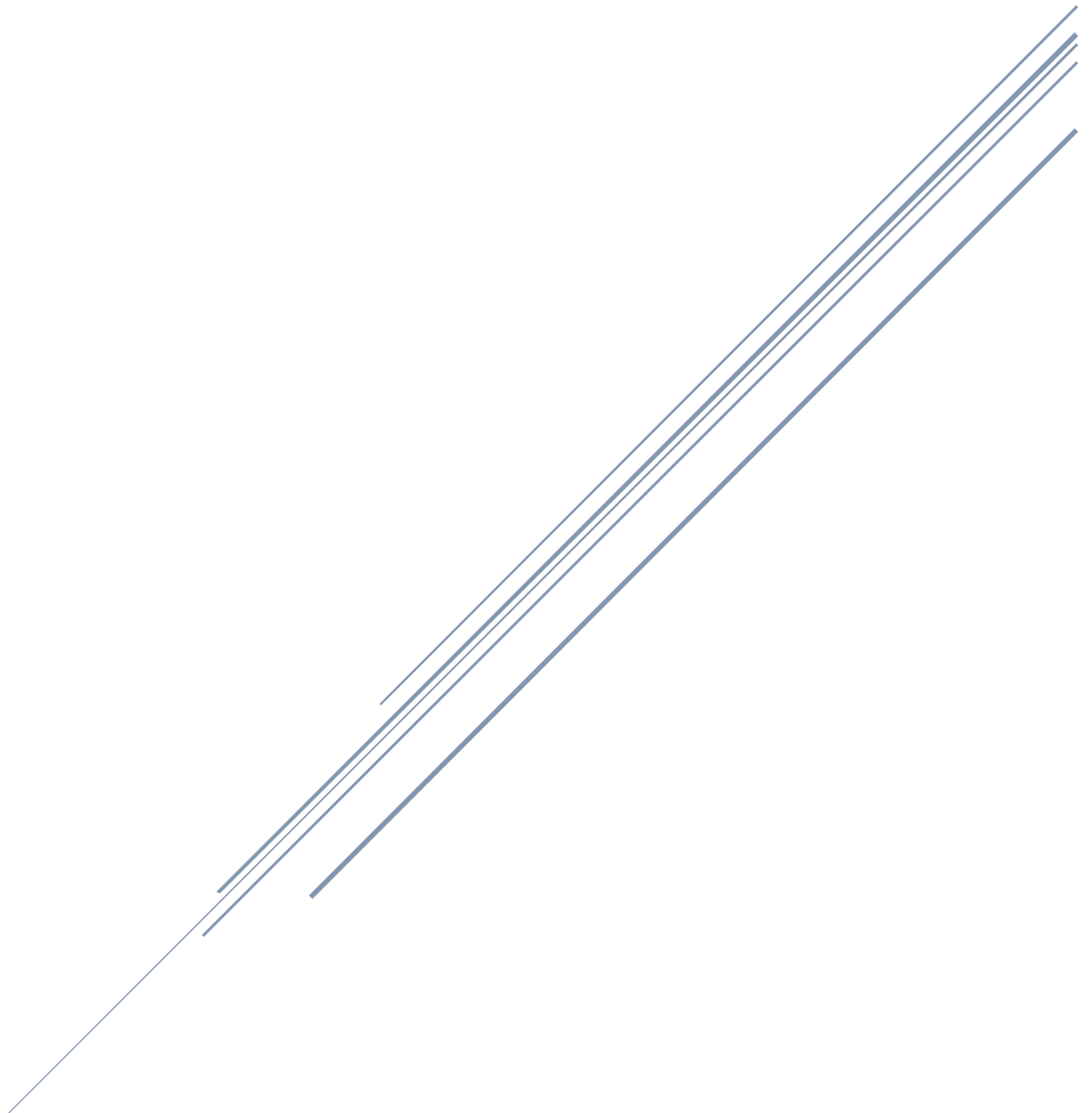


# SQL SERVER DBA TRAINING

SQL Server Security

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## What is the login in the SQL server?

A login is **a user account that you can use to access the SQL server**. Logins are attached to users by the security identifier (SID). Permissions to create a login: Users with membership in the security-admin or sysadmin fixed server role can create logins on the server

## Type of login in SQL server

There are two types of SQL server login,

1. Windows Server Authentication
2. SQL Server Authentication

## Sever level roles in the SQL Server.

SQL Server provides server-level roles to help you manage the permissions on a server. These roles are security principals that group other principals. Server-level roles are server-wide in their permissions scope. (*Roles are like groups in the Windows operating system.*)

Fixed server-level role	Description
<b>sysadmin</b>	Members of the <b>sysadmin</b> fixed server role can perform any activity in the server.
<b>setupadmin</b>	Members of the <b>setupadmin</b> fixed server role can add and remove linked servers by using Transact-SQL statements. ( <b>sysadmin</b> membership is needed when using Management Studio.)
<b>serveradmin</b>	Members of the <b>serveradmin</b> fixed server role can change server-wide configuration options and shut down the server.
<b>securityadmin</b>	<p>Members of the <b>securityadmin</b> fixed server role manage logins and their properties. They can GRANT, DENY, and REVOKE server-level permissions. They can also GRANT, DENY, and REVOKE database-level permissions if they have access to a database. Additionally, they can reset passwords for SQL Server logins.</p> <p><b>IMPORTANT:</b> The ability to grant access to the Database Engine and to configure user permissions allows the security admin to assign most server permissions. The <b>securityadmin</b> role should be treated as equivalent to the <b>sysadmin</b> role. As an alternative, starting with SQL Server 2022 (16.x) Preview, consider using the new fixed server role <b>##MS_LoginManager##</b>.</p>

<b>public</b>	<p>Every SQL Server login belongs to the <b>public</b> server role. When a server principal hasn't been granted or denied specific permissions on a securable object, the user inherits the permissions granted to <b>public</b> on that object. Only assign public permissions on any object when you want the object to be available to all users. You can't change membership in public.</p> <p><b>Note:</b> <b>public</b> is implemented differently than other roles, and permissions can be granted, denied, or revoked from the public fixed server roles.</p>
<b>processadmin</b>	Members of the <b>processadmin</b> fixed server role can end processes that are running in an instance of SQL Server.
<b>diskadmin</b>	The <b>diskadmin</b> fixed server role is used for managing disk files.
<b>dbcreator</b>	Members of the <b>dbcreator</b> fixed server role can create, alter, drop, and restore any database.
<b>bulkadmin</b>	<p>Members of the <b>bulkadmin</b> fixed server role can run the BULK INSERT statement.</p> <p>The <b>bulkadmin</b> role or ADMINISTER BULK OPERATIONS permissions isn't supported for SQL Server on Linux. Only the <b>sysadmin</b> can perform bulk inserts for SQL Server on Linux.</p>

## SQL Server Database User

A user is a database-level security principal. Logins must be mapped to a database user to connect to a database. A login can be mapped to different databases as different users but can only be mapped as one user in each database. In a partially contained database, a user can be created that does not have a login.

## Fixed-database roles

The following table shows the fixed-database roles and their capabilities. These roles exist in all databases. Except for the **public** database role, the permissions assigned to the fixed-database roles cannot be changed.

Fixed-Database role name	Description
<b>db_owner</b>	Members of the <b>db_owner</b> fixed database role can perform all configuration and maintenance activities on the database, and can also drop the database in SQL Server. (In SQL Database and Azure Synapse, some maintenance activities require server-level permissions and cannot be performed by <b>db_owners</b> .)
<b>db_securityadmin</b>	Members of the <b>db_securityadmin</b> fixed database role can modify role membership for custom roles only and manage permissions. Members of this role can potentially elevate their privileges and their actions should be monitored.

<b>db_accessadmin</b>	Members of the <b>db_accessadmin</b> fixed database role can add or remove access to the database for Windows logins, Windows groups, and SQL Server logins.
<b>db_backupoperator</b>	Members of the <b>db_backupoperator</b> fixed database role can back up the database.
<b>db_ddladmin</b>	Members of the <b>db_ddladmin</b> fixed database role can run any Data Definition Language (DDL) command in a database. Members of this role can potentially elevate their privileges by manipulating code that may get executed under high privileges and their actions should be monitored.
<b>db_datawriter</b>	Members of the <b>db_datawriter</b> fixed database role can add, delete, or change data in all user tables.
<b>db_datareader</b>	Members of the <b>db_datareader</b> fixed database role can read all data from all user tables and views. User objects can exist in any schema except <i>sys</i> and <i>INFORMATION_SCHEMA</i> .
<b>db_denydatawriter</b>	Members of the <b>db_denydatawriter</b> fixed database role cannot add, modify, or delete any data in the user tables within a database.
<b>db_denydatareader</b>	Members of the <b>db_denydatareader</b> fixed database role cannot read any data from the user tables and views within a database.