

# Amazon Redshift Interview Questions & Answers - Basic Level

## What is Amazon Redshift?

Amazon Redshift is a fully managed, petabyte-scale data warehouse service in the cloud. It allows you to run complex queries and perform analytics on large datasets using standard SQL.

## What are the key components of Redshift architecture?

Leader Node: Manages query planning and coordination.

Compute Nodes: Store data and execute queries.

Client Applications: Send SQL queries to the leader node.

Columnar Storage: Improves performance and compression.

## How is Redshift different from traditional RDBMS systems?

Columnar Storage: More efficient for analytics.

Massively Parallel Processing (MPP): Distributes workloads across nodes.

Optimized for Read-heavy Workloads: Great for OLAP, not OLTP.

Cloud-native: Managed service with easy scaling.

## What is a Redshift Cluster?

A Redshift cluster is a set of nodes (1 leader, 1+ compute nodes) that together perform data storage and processing tasks. The cluster is the fundamental unit of compute and storage.

## What are nodes in Redshift?

Leader Node: Parses queries and creates execution plans.

Compute Nodes: Perform the actual data operations (join, filter, aggregate).

## How does Redshift store data internally?

Data is stored in a columnar format, which allows better compression and faster reads for analytical queries.

## What is columnar storage and how does it help?

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Columnar storage stores data by column instead of row. This reduces I/O for analytical queries, improves compression, and speeds up aggregations and filtering.

### **What are the different node types in Redshift?**

Dense Storage (DS2): More storage, less performance.

Dense Compute (DC2): More CPU and RAM, less storage.

RA3: Modern node type that decouples storage and compute for better scalability.

### **What is a distribution key?**

A distribution key defines how data is distributed across compute nodes. A good dist key minimizes data movement during joins and improves performance.

### **What are the different distribution styles?**

KEY: Based on the value of one column.

EVEN: Evenly distributes rows (default).

ALL: Copies the entire table to all nodes (used for small dimension tables).

AUTO: Redshift decides the best distribution style.