Why choose RDS over self-managed DB on EC2?

👉 **Answer (Short answer):**
Amazon RDS is a **managed database service**. AWS takes care of patching, backups, monitoring, replication, and scaling.
If you run a DB on **EC2**, you're responsible for everything—installation, patching, backups, high availability, scaling.

✅ **Pros of RDS (for scalability & ease):**

1. **Auto Scaling** → With RDS, you can **vertically scale** (increase instance size) with just a few clicks, and for some engines you can also use **Aurora Auto Scaling** horizontally.
2. **High Availability** → Multi-AZ deployment gives failover to a standby DB automatically.
3. **Automated Backups & Patching** → No manual work. Snapshots, point-in-time recovery, security patches are handled by AWS.
4. **Read Replicas** → You can offload read-heavy traffic by creating replicas in minutes.
5. **Monitoring & Alerts** → CloudWatch + Enhanced Monitoring is built-in.

❌ **Cons of RDS:**

1. **Less Customization** → You can't deeply tune the OS or DB engine internals.
2. **Cost** → Slightly more expensive than EC2 for the same raw compute/storage.
3. **Limited Engines/Versions** → Only the DB engines AWS supports (MySQL, PostgreSQL, Aurora, etc.). If you need exotic/custom DB, EC2 is the only option.

✅ **Pros of DB on EC2:**

1. **Full Control** → Install any DB engine, tweak OS/DB parameters, custom backups.
2. **Cost Flexibility** → Can be cheaper if you manage it well, use spot/reserved EC2, etc.
3. **Special Use Cases** → Legacy apps or non-standard DBs not supported by RDS.

❌ **Cons of DB on EC2:**

1. **High Ops Overhead** → You must handle HA, backups, scaling, monitoring yourself.
2. **Scalability is Harder** → Adding replicas, load balancing, or failover is manual and error-prone.

3. **Downtime Risk** → Scaling usually needs downtime unless you've built complex clustering.

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- For **startups or fast-growing workloads**, **RDS** is preferred because it **removes operational burden** and **scales faster** with read replicas and multi-AZ.
- For **very specialized DB setups** or when **cost is critical**, **EC2 DB** can work, but you'll need strong DBA/DevOps skills to manage scaling.

Why choose Amazon RDS over a self-managed database on EC2, especially for scalability?
A. RDS requires you to manually handle backups, patching, and failover but gives full OS-level control.
B. RDS automatically manages scaling, backups, and high availability, reducing operational overhead.
C. Databases on EC2 can auto-scale horizontally using read replicas managed by AWS.
D. RDS is cheaper than EC2 for every use case because AWS automates everything.

✅ **Correct Answer: B**