



What's new in Amazon RDS for PostgreSQL?

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Today's Agenda

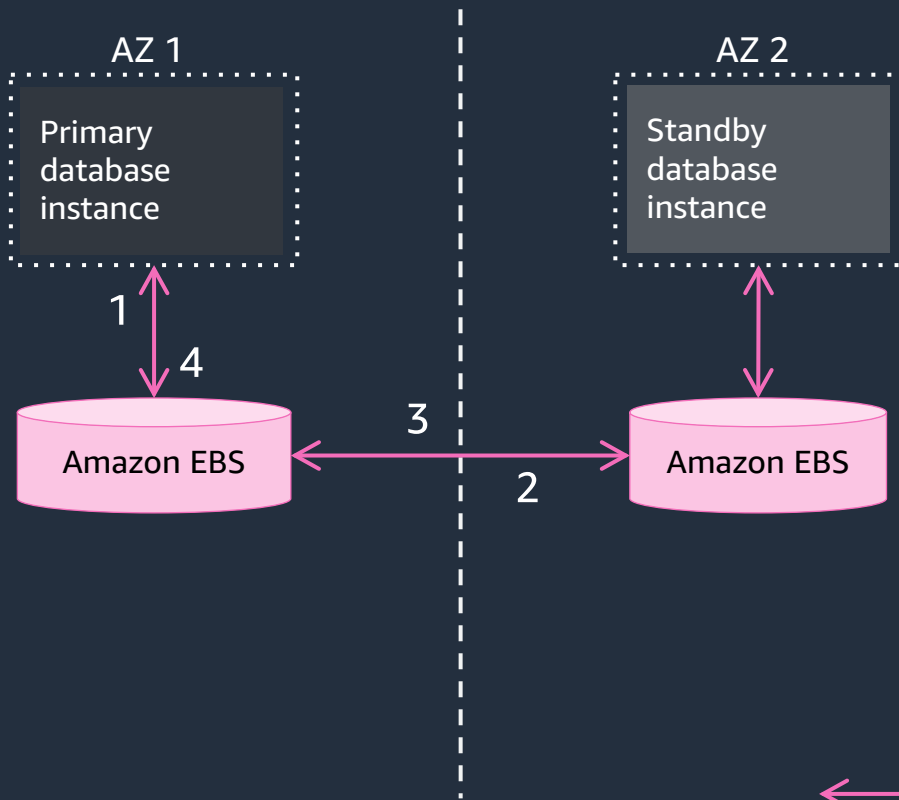
1. Multi-AZ with two readable standbys
2. Improvements to scalability and upgrades
3. New instance type
4. Trusted Language Extensions (TLE)
5. New capabilities with PG 15

What's new RDS PostgreSQL?

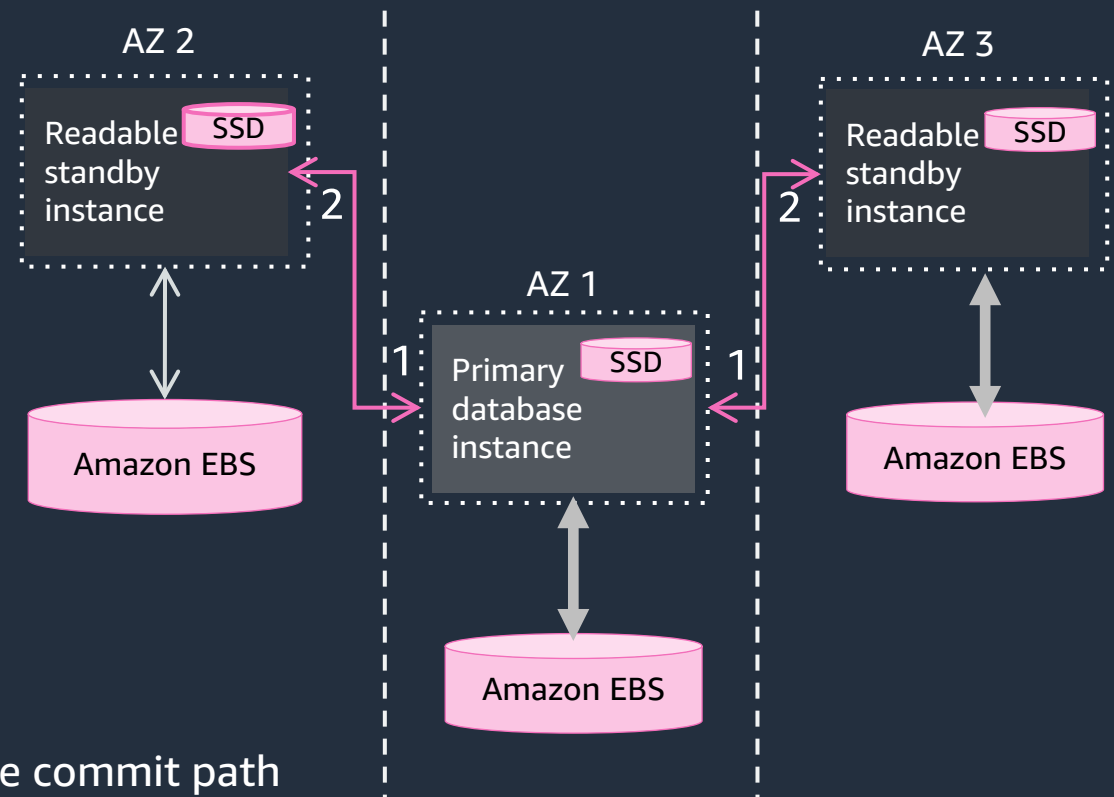
- Inbound replication support for Amazon RDS Multi-AZ with two readable standbys
- Snapshot restore from Multi-AZ with two readable standbys

Comparison of Multi-AZ options

One standby

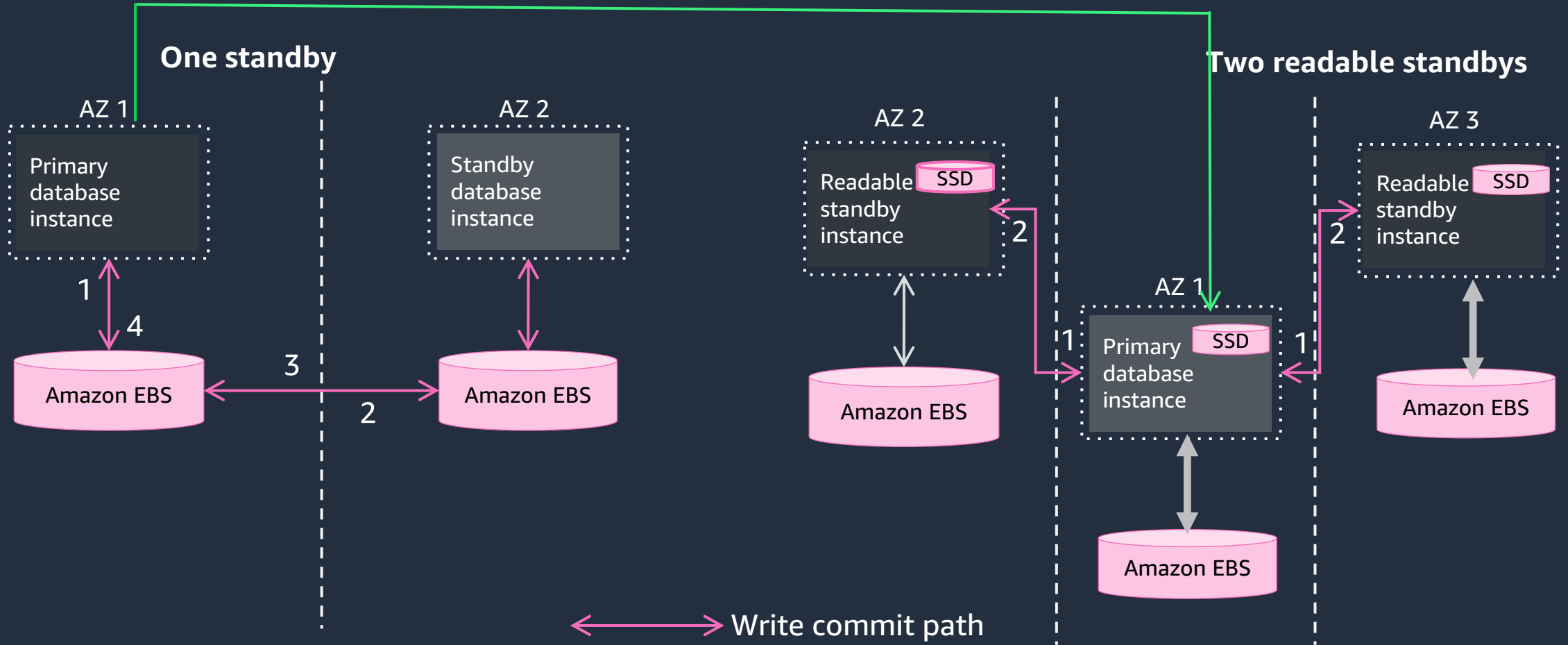


Two readable standbys



NEW: Inbound replication

Inbound replication support



Inbound replication support Multi-AZ with two readable standbys

DB identifier	Role	Engine	Engine version	Region & AZ	Size	Status
demo-instance	Primary	PostgreSQL	14.6	us-east-1a	db.t3.large	Available
demo-cluster	Multi-AZ DB replica cluster	PostgreSQL	14.6	us-east-1	3 instances	Modifying
demo-cluster-instance-1	Reader instance	PostgreSQL	14.6	us-east-1a	db.r6gd.xlarge	Creating
demo-cluster-instance-2	Reader instance	PostgreSQL	14.6	us-east-1c	db.r6gd.xlarge	Creating
demo-cluster-instance-3	Reader instance	PostgreSQL	14.6	us-east-1b	db.r6gd.xlarge	Creating

Create Multi-AZ deployments in AWS CLI

Multi-AZ DB instance

One standby

```
aws rds create-db-instance  
  --db-instance-identifier demo-instance \  
  --db-instance-class db.r6g.xlarge \  
  --engine postgres \  
  --engine-version 14.6 \  
  --master-user-password password \  
  --master-username demo_dba \  
  --port 5432 \  
  --backup-retention-period 1 \  
  --allocated-storage 1000 \  
  --db-subnet-group-name demo-sng
```

Three-AZ DB cluster

Two readable standbys

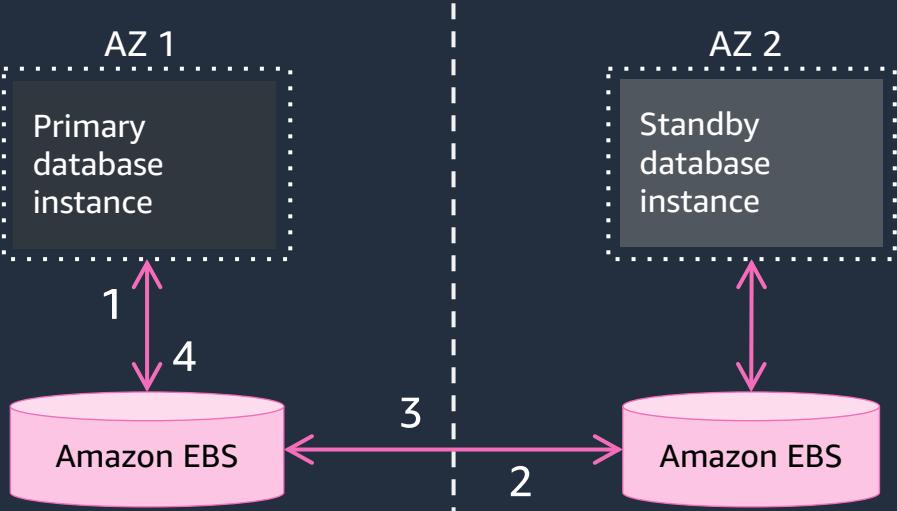
```
aws rds create-db-cluster  
  --db-cluster-identifier demo-cluster \  
  --db-cluster-instance-class db.r6gd.xlarge \  
  --engine postgres \  
  --engine-version 14.6 \  
  --storage-type io1 \  
  --iops 10000 \  
  --db-subnet-group-name demo-sng  
  --replication-source-identify arn:aws:rds:<region>:<account_id>:  
demo-instance
```

Improvements to scalability and upgrades

1. Improved in-place PostgreSQL major and upgrade experience - up to 50% faster upgrade
2. Support for Increase in storage size creating read replica/restore from snapshot
3. Read scalability - **3X read capacity**

Read scalability

15 read replicas for 3X read capacity



Write commit path

New: X2iedn Instance type



Memory-optimized instance



maximum of 4TiB



NVMe SSD instance store

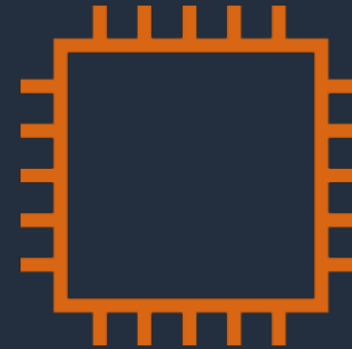


Up to 100 Gbps network throughput



read-intensive and high throughput write workloads.

X2iedn



RDS for PostgreSQL version 13.7 and higher, and version 14.5 and higher.

RDS for MySQL version 8.0.28 and higher

Trusted Language Extensions (TLE)

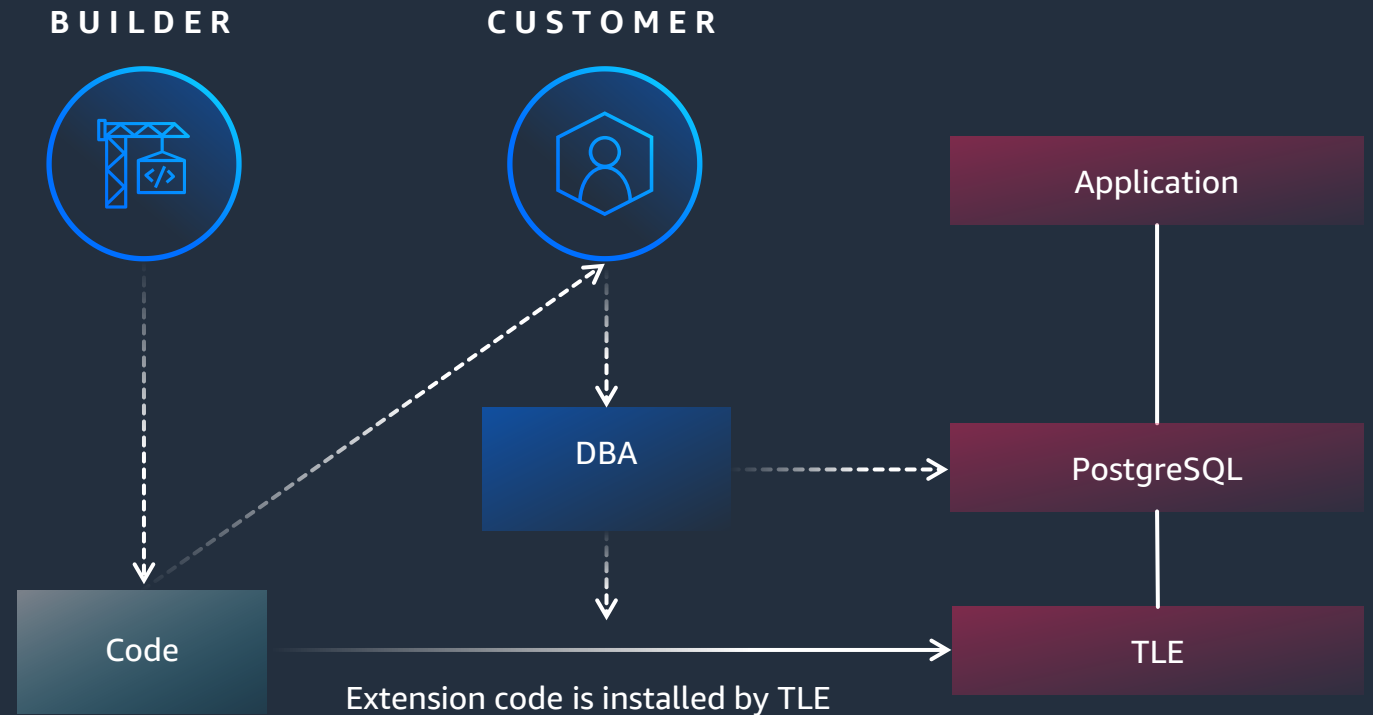
OPEN-SOURCE PROJECT THAT ALLOWS YOU TO QUICKLY BUILD HIGH PERFORMANCE EXTENSIONS AND SAFELY RUN THEM ON MANAGED SERVICES

Available on Aurora PostgreSQL-Compatible and RDS for PostgreSQL 14.5 and higher

Builders create new libraries using TLE framework

Customers choose TLE extensions for their applications

DBAs control who can install and manage TLE extensions



Safely extend PostgreSQL capabilities

TLE PROVIDES SAFE OPERATION OF POSTGRESQL EXTENSIONS IN PRODUCTION

Improved safety

Enforces use of PostgreSQL trusted languages

TLE API provides safe access to PostgreSQL internals

High performance

Supports languages that have C-like performance

Removes need for C expertise to create a safe extension

More flexibility

Build and use extensions on your timeline

Reduces DBA certification burden



PostgreSQL 15 Summary

- Significant work on simplifying developer experience
- More space-saving options for backups and archives
- More flexibility with logical replication
- General improvements that help with daily tasks

Colorful features of PostgreSQL15

- Improved in-memory sort performance
- MERGE command
 - INSERT/UPDATE/DELETE based on conditions
- LZ4 + Zstandard (zstd) Write-ahead log (WAL) compression
- Logical replication improvements



Thank you!

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