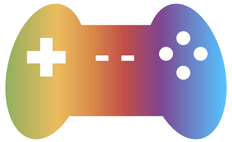
Intro to Databases in Games:
How to Use them in Games and Game Development



Nick Walsh, Technical Evangelist, AWS

Tabitha Graves, Community Enablement Manager, AWS

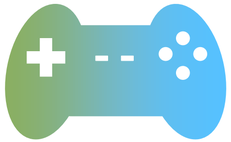
January 29, 2020

What is a Database

Optimized Storage and Retrieval

Handles Concurrency

Security & Scaling



How Game Development can Benefit from a Database

Build a Connected Game

Lightning Fast Querying

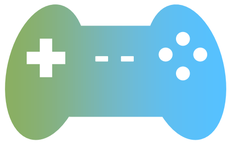
Game State Perspective

Game Databases Meet the Cloud

Allows Players Access to Data

Speed of Data Retrieval

Scales with your Game



Which AWS Database is Right for Your Game

Each is Purpose Built

Game Type, Data Retrieval Rate, Experimentation

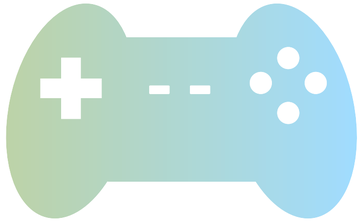
Player Journey

Which AWS Database is Right for Your Game

Amazon Aurora

Amazon DynamoDB

Amazon ElastiCache



Amazon DocumentDB

Amazon Quantum Ledger Database

Amazon Neptune

Relational Database

SQL

Data Stored in
“Rows” and “Columns”

Requires Structure
to be Predetermined

Flexible Queries

Always Consistent

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Amazon Aurora

Relational Database
Built for the Cloud

Fully Managed Exclusively by
Amazon Relational
Database Service
(RDS)

MySQL Compatible

PostgreSQL Compatible

Migrate Existing Workloads
to the Cloud

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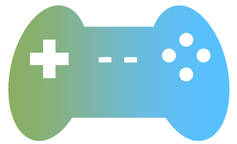

Game Development Examples

Player Data

Game Data

Inventory

Item Shops / Trading

High Scores
(Historical/Analysis)

Non-Relational Database

NoSQL

Data Stored in
Many Different Ways

Structure Can Change
For Each Entry

Queries Have
Higher Specificity

May Not Always
Be Consistent

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DynamoDB

Fully Managed NoSQL
Database Service

Key-Value & Document Structure
MySQL Compatible

Unique Keys Mapped
to Data “Blobs”

Low Latency Data Access

Easy to Scale

Flexible Structure

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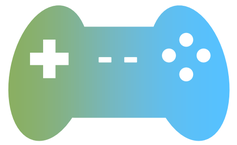

Game Development Examples

Player/Item
Stats/Profile
Game Data

Enchantments and
Upgrades

Game States
Quest Data

In-Memory Database

Extremely Fast
(Memory versus Hard Disk)

Key-Value

Fast Sorted/Ranged Searches

No Persistance
Beyond Server

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Amazon ElastiCache

Fully Managed Data Store

Compatible with Redis or Memcached

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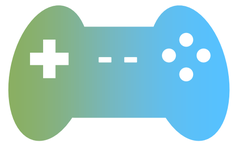

Game Development Examples

Matchmaking

Leaderboards

Session Management

Boost Performance For Other Databases

Document Database

Special Case
Key-Value Database

Data Blobs Can be
Very Large

Flexible Object Structure

Requires More “hands on”
Management of Scaling

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MongoDB Compatible

Storage and Compute
are Decoupled

Fast

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Highly Available

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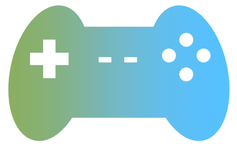

Game Development Examples

On Demand
Assets

Tools

Quest/Player/Item
Descriptions

Ledger Database

NoSQL

Transaction Based

Keeps Track of History
Cryptographically

History Cannot be Changed

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Fully Managed
Ledger Database

Provides Verifiable
Transaction Log

Owned by a Central
Trusted Authority

Tracks Each and Every
Application Data Change

Data Change History
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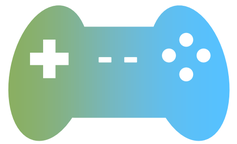

Game Development Examples

Currency or Item Trades

Auction House

Quest/Player/Item Descriptions

Characters/Items/Rules That can Move from Game to Game

Graph Database

NoSQL

Stores Relationships
Between Data

SPOG
(Subject, Predicate,
Object, Graph)

Not Optimal for
General Key Searches

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Graph Database Service

Supports Popular Graph Models:
Property Graph, W3C's RDF

Query Languages:
Apache TinkerPop Gremlin, SPARQL

High Performance and Scalability

High Availability and Durability

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Game Development Examples

Cheat Detection

Social Graph

Dynamic NPC Relationship

Gameplay
Recommendations

Model Game Economy

Fighting Games

Action Adventure

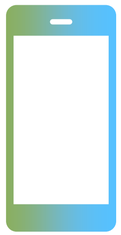
MMORPG

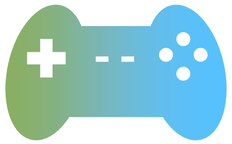
RPG

Multiplayer Voxel

Turn Based

Shooters





Survival Horror

Platformers

Racer

Puzzles

Battle-Royale

MOBA

RTS

To The Demo!

Have a question after the show?

Visit https://aws.amazon.com/gametech/ for more information

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Thank you for watching!