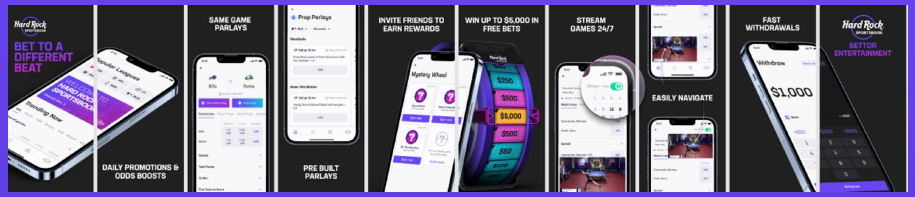
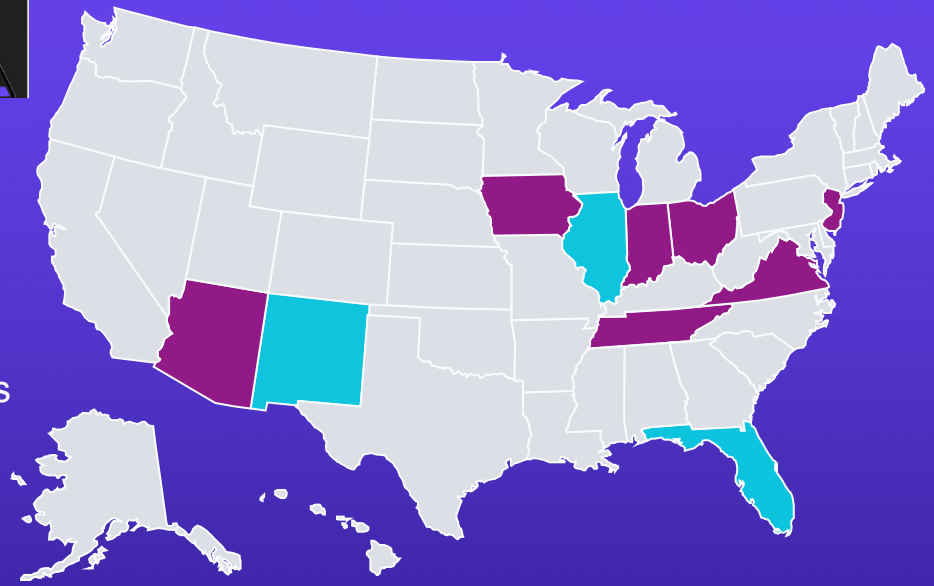
Yes, you can reduce TCO while meeting strict regulatory requirements

James Lupolt, Senior Database Administrator
Joe Rizzo, Senior Platform Architect

Into to Hard Rock Digital





- Founded in November 2020
- Headquartered in Fort Lauderdale, Florida
- Technology & product headquartered in Austin, Texas
- 350+ employees across multiple states & countries
- Live in 7 US States with #1 Rated iOS App (4.8 Stars)

Hard Rock Digital Use Case

- Regulatory requirements prevent us from using most managed services
- Legacy architecture treats each jurisdiction as standalone deployment
- Many distinct deployments create operational overhead
- Challenging to achieve first mover advantage for newer markets
- Infrastructure-as-code-based operational model

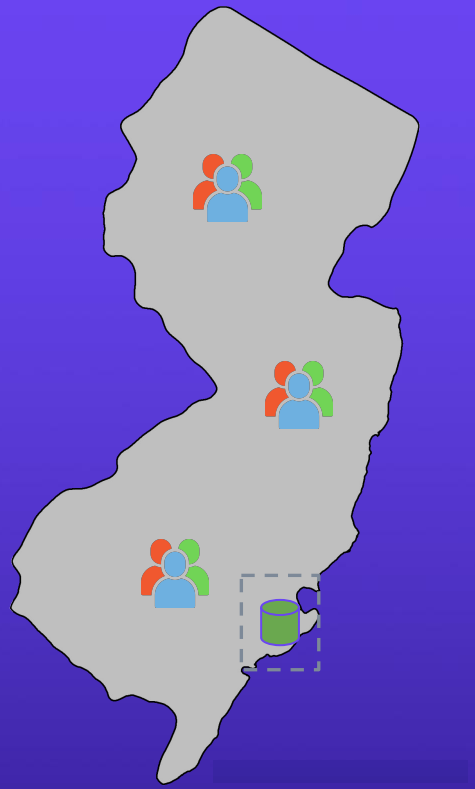
Regulatory Constraints

- Specific transactions must take place in a geographic location
  - Example: Placing a bet must transact
    - In a particular US state
    - On territory governed by a particular tribe

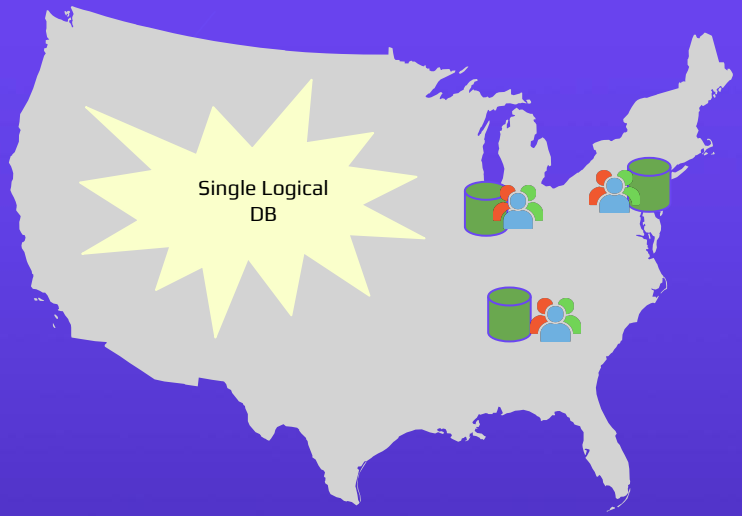
- Certain data can only be in certain locations

- Certain data can be only updated from certain locations

There’s no way to meet all of these requirements with a single managed service, e.g. Cockroach Cloud in AWS Region or EC2 on AWS local zones



Cockroach & AWS For The Win!



Self-hosting CockroachDB in the least expensive and burdensome way:

- CockroachDB on EC2 instance in the AWS Regions or AWS Local Zones locations where allowed
- CockroachDB on EC2 running in an Amazon Outpost elsewhere

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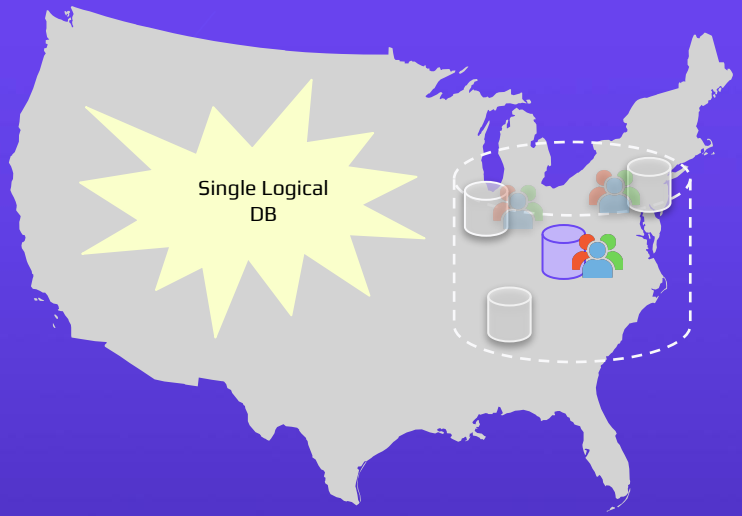

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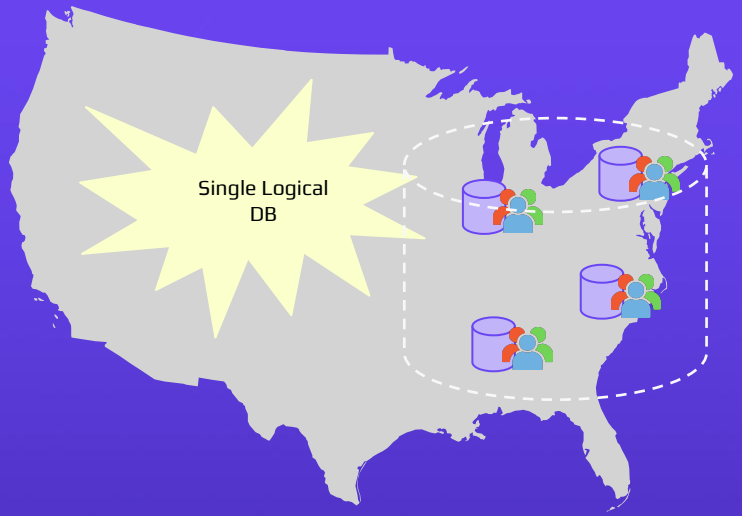

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AWS Cloud Continuum

AWS Regions

AWS Local Zones

AWS Outposts

Outposts rack

Outposts servers

For most use cases

For low-latency, local data processing, data residency

Same infrastructure, services, APIs, and tools for a consistent experience

AWS Outposts rack

Industry standard 42U rack

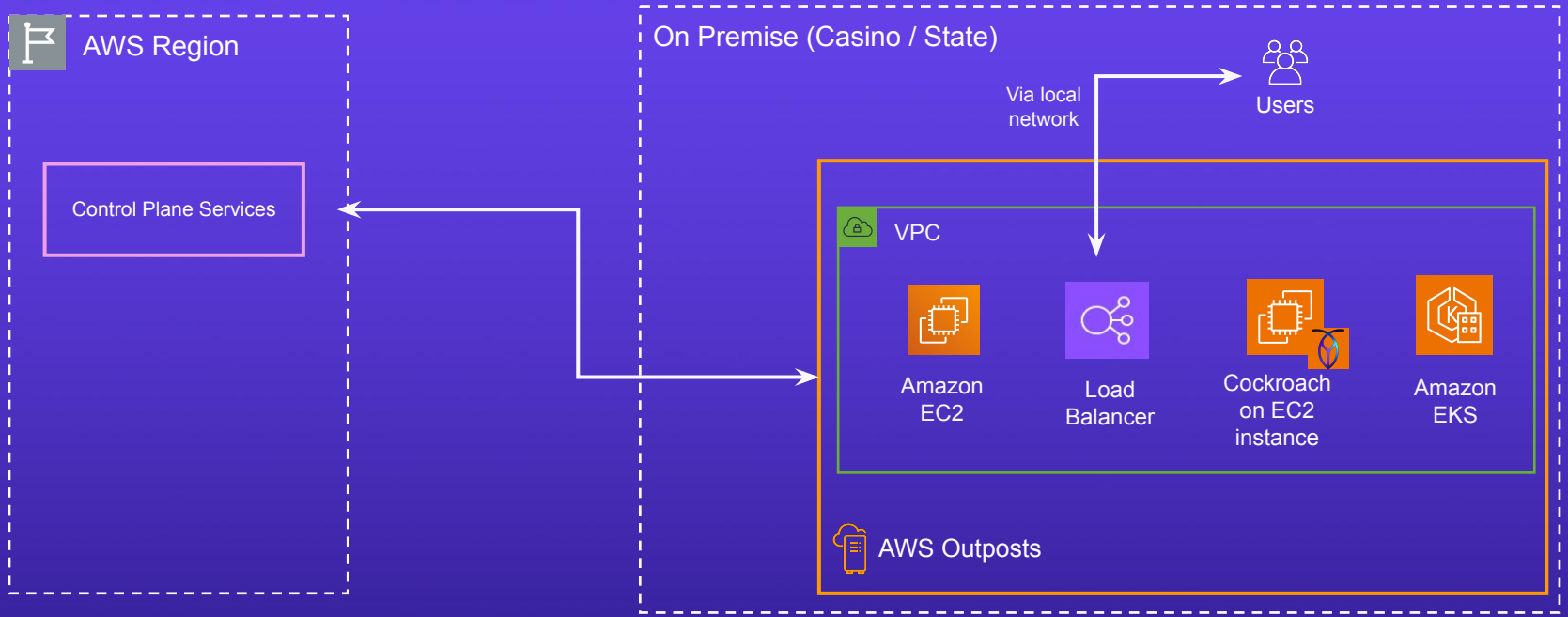
Fully assembled, ready to be rolled into final position

Installed by AWS, simply plugged into power and network

Centralized redundant power conversion unit and DC distribution system for higher reliability, energy efficiency, easier serviceability

Redundant active components including top of rack switches

Customer data and processing can stay resident on AWS Outposts



Lessons we learned – Decentralization

- Beware of unnecessary decentralization
- You can use a distributed database without decentralizing everything

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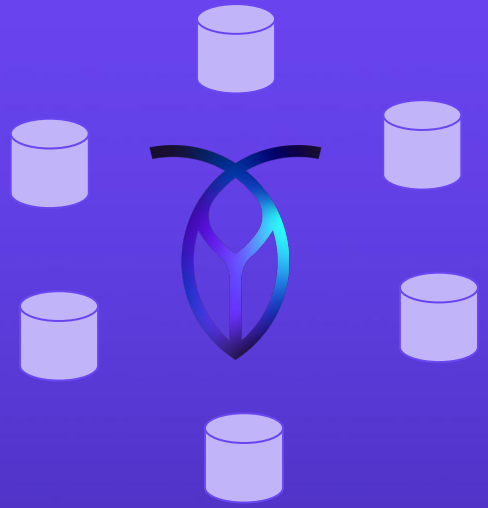
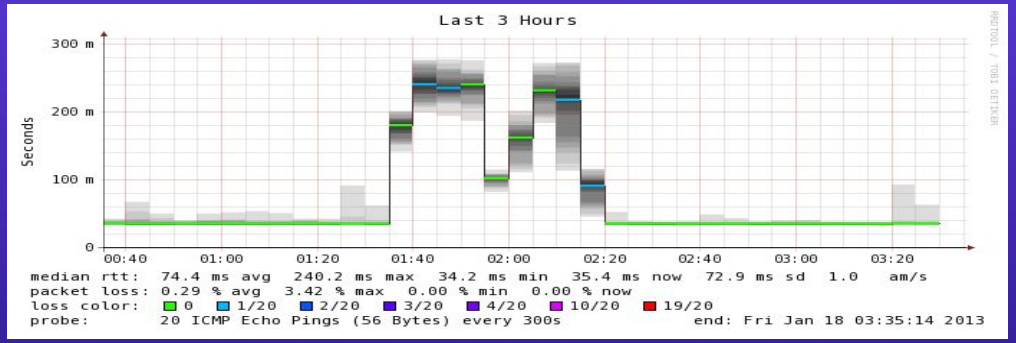


- Beware of unnecessary decentralization
- You can use a distributed database without decentralizing everything

Lessons we learned – Network monitoring

- Cross-product of connections between each node
- Some packet loss or latency from time to time
- MPLS can help simplify networking
- Great product for simple packet loss and latency tracking: Smokeping



Lessons we learned – Query performance

- Don’t forget to consider the network when analyzing query performance
- Minimize round trips between client and gateway, and gateway and leaseholder
- Use historical reads plus non-voting replicas for fast queries from non-leaseholder

Otherwise queries can only be as fast as the latency between the gateway node and the leaseholder

Conclusion

Accelerate time to market

Write once, deploy anywhere

Infrastructure-as-code for operational efficiency

Learn more

AWS Outposts

Blog: How Hard Rock Digital built a highly available and compliant sports betting app

Blog: Best Practices of Running Regulated Gaming Workloads on AWS

Talk to an AWS expert

Name: Pawan Ashok Matta

Title: Senior Solutions Architect

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