Cubeia

Firebase

A Distributed Game Server

20080123

Cubeia profile

Mission: To provide scalable, high availability enterprise game servers based on our long experience in the gambling and internet application industry.

- Cubeia was founded in 2006 as a game industry development company focusing on back-end platforms.
- All developers have previous experience with game back-end development and consulting.
- The Firebase platform is a game independent, high availability, scalable platform for multiplayer online games. It is developed from the start with the gaming industry in mind. It provides an API for game development using event-driven messaging and libraries for point-to-point client to server communication.
- The Cubeia team managed and extended the TAIN clustered poker solution, while ensuring high scalability and performance. They further adapted the TAIN cage server against Playtech iPoker.

Cubeia

Common back-end system issues

- Long time-to-market for new games
- Complex performance issues
- System maintenance down-time
- Not very scalable
- Legacy issues
- Back-end not adapted to virtualization and clustering
- Server side development is risky

Cubeia

Why is back-end a priority

Time-to-market

- Time to market is important, and to bring a well tested, scalable and high performance platform is important.

Cost

- The cost of unplanned down-time and low performance is very high.

Performance

- Performance issues are difficult to test and fix, and can be dependent on legacy.

Development

- Back-end development takes long time and requires dedicated developers

Quality

- Testing and debugging of back-end systems are complicated

Cubeia

Firebase game development

Firebase is an enterprise server solution for game development.

Firebase can used for developing online games like:
Poker, Multiplayer Casinos, Backgammon, Mahjong, Bingo, Quizzes, Board Games, Chess, Massive multiplayer communities,
…and much more!

Cubeia

Firebase advantages

Time to Market	The Firebase platform cuts time to market and enables game developers to concentrate on making games.
Economy	The costs of operation scales with the revenue. Small installations can run on cheap “pizza box” hardware, whereas large multi-million dollar projects can be run on top of the line server clusters.
Scalability and High Availability	Firebase is built from scratch to be scalable and to provide high availability. Start or stop single servers in the cluster without affecting game play. Automated adoption to cluster changes
Development Risk	Firebase handles the game transactions, data replication, topology distribution and adoption, system stability, network communication etc. The risk of the project is then concentrated to the actual game.
Maintenance Costs	Low costs for maintaining and refining non-functional requirements. Development is optimized for back-end development.

Cubeia

Firebase technologies

- Transparent fail-over
- Automatic load balancing
- Smart data replication
- Dynamic topology
- Built-in persistence layer (JDBC/JPA)
- Game independent design
- Event driven design
- Service oriented architecture

Firebase distributed technology enables:

- Massive amount of concurrent players
- High quality of service

Firebase includes support and APIs for the following client technologies:

- Java
- C++
- Flash

Cubeia

Firebase game development

Functional features / API:
• Login
• Tables and players
• Lobby
• Waiting list
• Private tables
• Chat (table and channel based)
• Client session (connect / disconnect)
• Player session (join / leave table)
• Tournaments

API Features
• Declarative transactions (JTA)
• Persistence (JPA)
• Configurable messaging
• Enable / disable fail-over replication
• Service oriented design
• Transparent thread safety

Cubeia

Implementation steps

Game logic → Services
- Login handler
- Wallet integration
- Other integration points

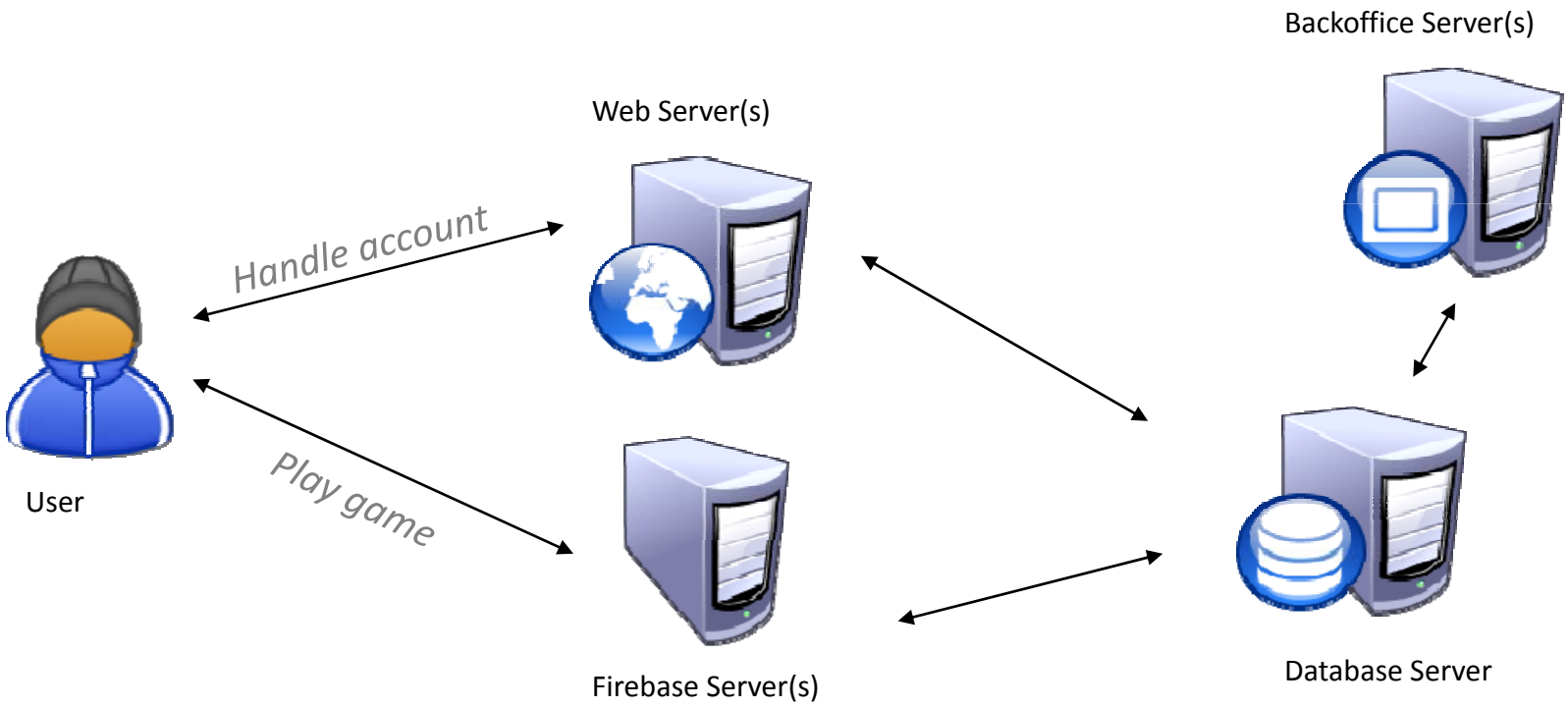
→ Audit log → Tournament logic → Client development

To choose Firebase means that time, money and effort can be spent on the game and the users. The games will be easily integrated into the back-end.

Short time-to-market, scalability is no issue, known development cost for back-end.

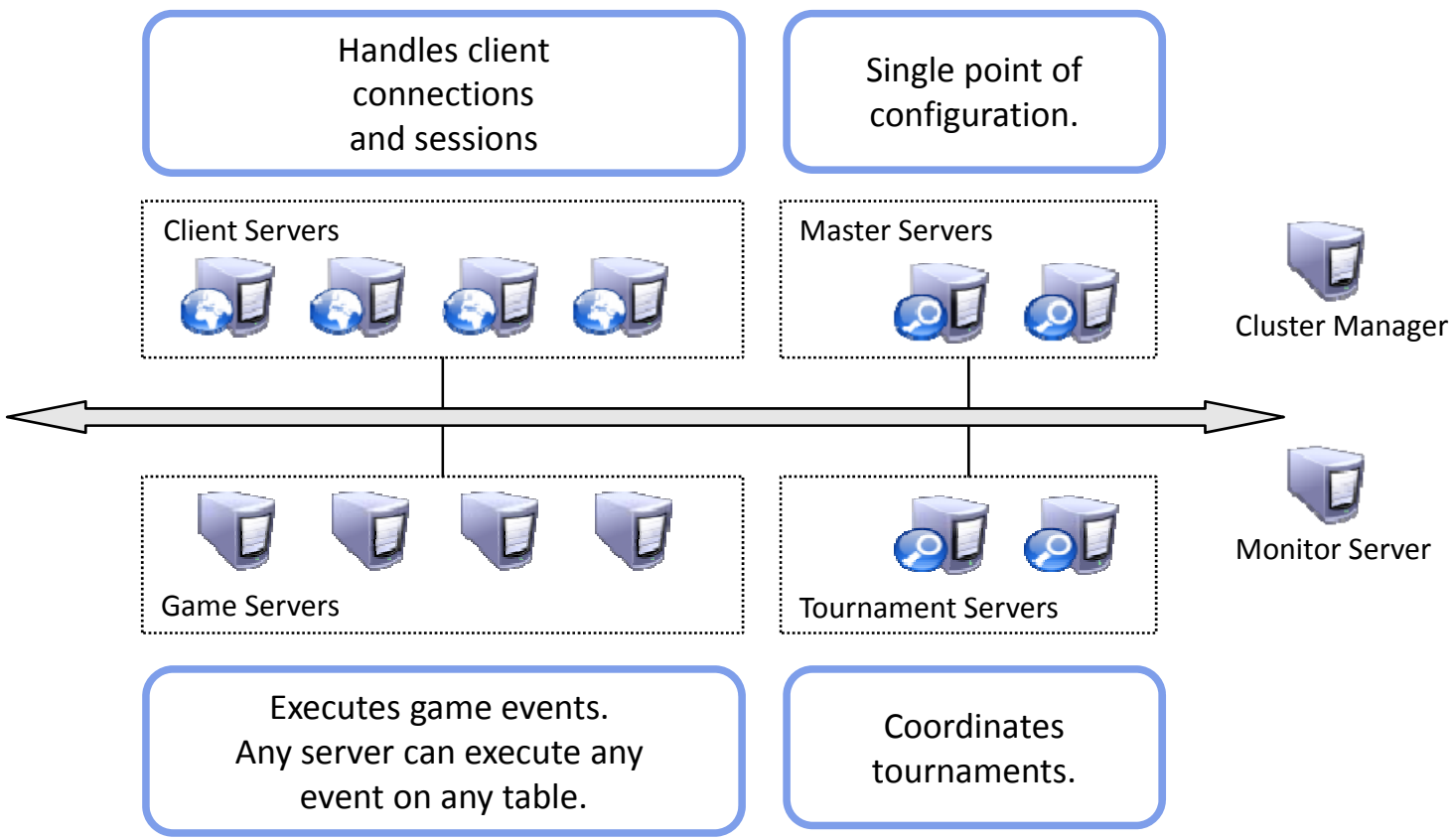
Cubeia

Example Deployment



Cubeia

Example Firebase cluster



Cubeia

Lobby

Efficient Lobby can save much bandwidth cost

Can save up to 50% bandwidth by optimizing bandwidth usage through slave nodes serving non-critical / non-sensitive information

- Very bandwidth efficient
- Binary protocol
- Only changes are sent to clients
- Tree structure
- Subscribe on complete lobby or just a subset
- Custom parameters supported
- Tables and Tournaments

Cubeia

Summary

The Firebase enterprise server technology

- Bandwidth efficient lobby
- Transparent fail-over
- Automatic cluster load balancing
- Dynamic server topology
- Game independent design
- Transparent client thread safety
- Encouraging modular design of games

Efficient server model

- Short Time-To-Market
- High Scalability
- High availabiliy
- Known development cost
- Short development time

Cubeia

Cubeia Firebase

Cubeia

Contact:

- CEO: Fredrik Johansson
- Fredrik.johansson@cubeia.com
- +46 707 540 856