



Conference Article

# The Development of a Platform as a Service for Game Key Distribution

Deniz Tahmaz<sup>1\*</sup>, Yasin Başer<sup>2</sup> and Esma Güneş<sup>3</sup>

<sup>1</sup> Triodor R&D Center, e-mail: deniz.tahmaz@azerion.com

<sup>2</sup> Azerion BV, e-mail: y.baser@azerion.com

<sup>3</sup> Triodor R&D Center, e-mail: e.gunes@azerion.com

\* Correspondence: deniz.tahmaz@azerion.com

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## Abstract

*In the digital game industry, sales methods and revenue sources can vary. In recent years, distribution carried out through digital platforms has surpassed physical copy sales, significantly increasing its market share. In this dynamic industry, it is important for publishers to securely deliver game licenses belonging to end-users and to maximize stakeholder profitability in this process. Within the scope of this study, a digital game distribution platform has been developed that establishes seamless connections between content owners and sales channels, and efficiently distributes digital content procured from content owners to various sales channels. Through this platform, efforts have been made to strengthen the digital content ecosystem; studies have been conducted regarding product loading processes, seamless technical integration, optimization of promotional strategies, ensuring secure distribution, and increasing revenue streams.*

**Keywords:** Game digital key, distribution platform, PaaS



## 1. Introduction

Digital games are software-based, programmable games that can be played on electronic devices (PCs, consoles, tablets, and smartphones) [1]. The acceleration of digitalization, along with the development and widespread adoption of mobile devices and computer hardware, has enabled the digital game market to reach a large volume and audience. Sales methods and revenue sources may vary within the digital game industry. For example, revenue can be generated through in-game advertising and purchases, subscription-based sales, and digital or physical copies [2]. The fundamental components of this sector's ecosystem are game developers, publishers, software and hardware development companies, and digital platforms [3]. The sales via digital platforms method has overtaken physical copy sales, significantly increasing its market share in recent years. Sales on game consoles, the most important platform for physical copies, have shifted towards digital. Game sales on digital platforms are carried out through digital distribution methods. Developers list their games on platforms such as Steam, Epic Games, PlayStation Store, etc. [4]. Users purchase these games using payment methods such as credit cards or digital wallets. After purchase, the games are added to the user's account and become available for download. Updates, add-ons, and in-game purchases are also offered through these platforms. This method has become more popular than physical copies because it is fast and cost-effective. A "digital key" is a unique code used to activate a game or software. It provides licensing for games purchased digitally, instead of as physical copies. An e-tailer, or digital retailer, is the name given to businesses that sell products and services over the internet. Unlike traditional physical stores, they operate entirely online [5]. The distributor is the link between the developer/publisher and the retailer [6].

The distribution platform developed within the scope of this study is positioned as a game license provider between publishers and digital retailers. It facilitates the sale of game data obtained from the publisher to the digital retailer. The main users on this platform are divided into two groups: publishers and digital retailers, and a portal has been developed for each user group. Users can control the tasks involved in game license operations from their respective portals. In addition, with the development of "admin portal," the operations and marketing teams working within the distribution platform can perform the necessary controls and settings for customers and catalogs. In summary, there are currently 3 main portals on this distribution platform, and the platform has approximately 190 publisher partners and 75 digital retailer users.



On this platform, it is crucial for publishers to securely deliver game licenses to users and to increase mutual profits during this process. A secure distribution process increases user trust and satisfaction with the product, while also guarding and increasing revenue for publishers. This secure distribution both enhances customer satisfaction by maintaining software quality and contributes to strengthening publishers' brand reputation. Therefore, secure game license sales management and distribution create an important win-win situation for both users and publishers.

## 2. Materials and Methods

The development of a digital distribution platform involves overcoming a series of critical technical challenges. The foremost of these challenges are: detecting and preventing fraud, regional price arbitrage/farming, ensuring data security and integrity, scalability bottlenecks, detection of fraudulent users and bot accounts, and system-wide performance optimization.

This study aims to resolve these technical issues. To achieve this goal, proactive security measures and specific system improvements have been designed and implemented. These engineering efforts aim to minimize the platform's operational risks and ultimately provide a direct and significant contribution to the product's profitability metrics.

### 2.1. Key Portal

One of the fundamental security concerns of the platform architecture is the secure lifecycle management of sensitive data such as cryptographic key information and digital assets. To meet this requirement, a dedicated secure vault system called "Key Portal" was designed and developed. Considering the possibility that publishers may work with multiple distributors simultaneously within the ecosystem, it became mandatory to architecturally separate and isolate the digital data stored in Key Portal from the main distribution platform itself. The legacy system relied on a monolithic approach, where the digital data requested by the platform was uploaded directly to the platform. In the current architecture, Key Portal is positioned as a service that is independent and separated from the platform. This design adopts a zero-trust security model, which requires that even the platform's core services do not have direct access rights to these

digital assets. Data protection is critically important, including scenarios involving access privilege violations or storage layer leaks. Therefore, a robust encryption methodology has been implemented that makes it impossible to decrypt the data without platform-independent managed keys, even if unauthorized access to the data is gained.

The “Key Portal” microservice was developed using the Golang programming language, and a PostgreSQL database was chosen for the persistence layer. The system's architectural breakdown is detailed in Figure 1.

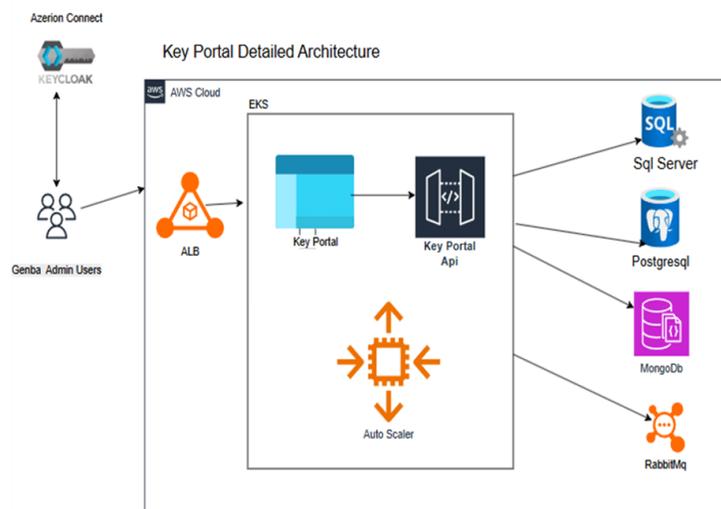


Figure 1: Key Portal system architecture

The processing of license data (digital game key) obtained from the publisher is performed through the “Key Portal” service developed within the scope of this work. This architecture enables the distribution of key data while ensuring its protection and management at a superior security level. In previous phases of the project, the supply, transmission, and management of key data were mostly carried out through manual and uncontrolled processes via insecure communication channels such as email and internet applications. Eliminating the obvious potential security vulnerabilities in this methodology with this system has increased the platform's total value proposition and ensured the integrity and confidentiality of critical digital assets.



A secure storage architecture at this level requires comprehensive and multi-layered testing processes (penetration tests, load tests, etc.). The platform is expected to scale to process and distribute millions of keys per month. Considering that the cumulative potential value of these digital assets could reach billions of euros over time, establishing maximum security during the distribution process is a critical operational requirement. The system has been developed in such a way that no one, including infrastructure administrators, can access the stored key data.

## 2.2. Rule Manager

The Rule Manager component is designed to operate as a pre-processing layer in the system's network ingress vector, in front of the Web Application Firewall (WAF) and API Gateway layers. The primary goal in developing this mechanism is to proactively detect high-risk situations that will be classified or labeled as anomalies by the “Control Tower” (a potential centralized anomaly detection system) before they are fully integrated into the system. The aim is to restrict and block the access of these detected suspicious activities to API endpoints. The system architecture of the rule manager is shown in Figure 2.

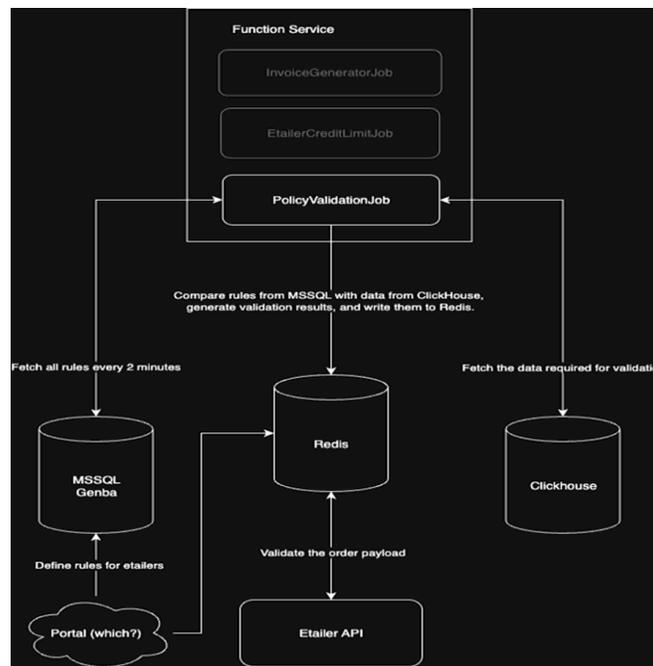


Figure 2: Rule manager system architecture



This developed system has the ability to dynamically detect and automatically block IP addresses (or IP ranges) associated with fraudulent activities. This ensures that the security of the entire infrastructure is strengthened and protected by cutting off malicious actors' access to the system at the very first point of contact.

### 2.3. Reporting Service

Data is strategically positioned to enable businesses to monitor the effectiveness of their marketing strategies, track operational sales performance (KPIs), and proactively manage unexpected situations. However, the inherently multi-variate nature of data makes interpreting this raw data and converting it into actionable insights both necessary and complex. Although there are numerous third-party solutions for analytical data examination on the market, it was necessary to first determine the specific metrics and fundamental business requirements of the distribution platform. Based on the needs analysis conducted, a specialized data processing and reporting architecture (Figure 3) was developed, integrated into the platform infrastructure, with a foundation in data security and governance.

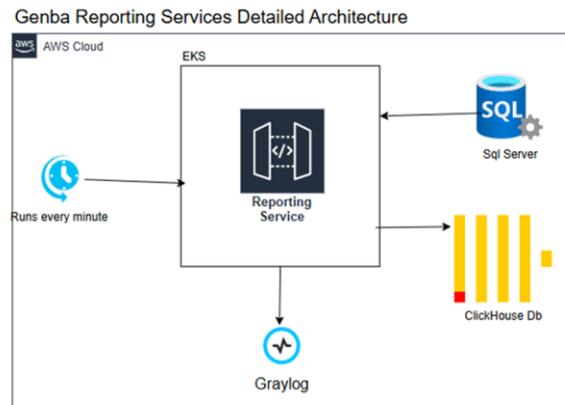


Figure 3: Reporting service architecture

One of the fundamental requirements of this architecture is the ability to cross-query heterogeneous data types from different sources in a relational manner. Most importantly, this querying capability is intended to be offered as a "Self-Service BI" layer that allows non-technical end users to easily create their own custom reports and save them through a visual interface without requiring any SQL knowledge. This feature will serve a dual purpose: both for the platform's own operational efficiency and as a value-



added service for customers. This way, all necessary reports can be generated instantly in the event of a potential audit or compliance request, while our customers can easily gain full visibility and control over their sales performance and operations.

### 3. Result

Within the scope of the study, a comprehensive data processing and decision support mechanism was developed to analyze traffic flows and operational data across the system. This mechanism is based on the processes of centrally collecting and clustering system logs and heterogeneous data. This structure has provided a solid foundation for a conscious and proactive decision-making framework based on actionable insights obtained through the analysis of data generated by the platform. This development has also resolved the limitations arising from the platform's previous architecture. In the previous system, the monolithic database model, which directly and rigidly defined workflows, prevented the implementation of flexible and new business models. As a primary outcome of the current work, this monolithic structure has been broken down, and services have been successfully separated from each other. This architectural transformation ensures that services can operate completely isolated from each other and can be independently scaled in line with future business requirements.

The most fundamental constraint in the development process was identified as the requirement to maintain uninterrupted live business operations. This necessitated preserving the functional integrity of the existing business model in the new system. To achieve this goal, the designed new system architecture had to not only support next-generation infrastructure components but also provide full backward compatibility for the legacy system. This dual requirement necessitated the adoption of a hybrid and complex transition architecture that simultaneously accommodates both perspectives when making architectural decisions or planning internal workflows. In cases where unforeseen or fundamental architectural incompatibilities between the two systems were identified during the analysis process, temporary technical solutions were inevitably implemented to ensure operational continuity. However, a proactive strategy is being developed to manage the potential technical issues that these temporary solutions may create. This strategy involves identifying the temporary solutions implemented and reworking them into permanent and sustainable features of the new system architecture once the full transition is complete.



#### 4. Discussion and Conclusion

Digital retailers have been equipped with comprehensive analytical capabilities regarding sales data. This capability provides a strategic differentiation by offering superior data transparency compared to competing platforms. The platform goes beyond basic distribution logic and is positioned as a B2B service tool designed to enable customers to effectively run their own commercial operations. By adopting this customer-centric development approach, customers' commercial gains have been prioritized. The innovations implemented and features developed offer customers a highly dynamic experience and the ability to take swift action based on actionable insights. These gains enable customers to analyze their commercial performance in real-time or near real-time and have the flexibility to make necessary operational interventions.



## References

- [1] Bergonse, R., Fifty years on, what exactly is a videogame? An essentialistic definitional approach. *The Computer Games Journal*, 2017. 6(4): p. 239-255.
- [2] Utku Can Aytaç, Ali Güneş, Tayfun Küçükyılmaz, Gönenç Seçil Tarakcioğlu, Comparison of Time Series Models for Predicting Online Gaming Company Revenue, 2022
- [3] Stewart, J., & Mısıraca, G., *The Industry and Policy Context for Digital Games for Empowerment and Inclusion: Market Analysis, Future Prospects and Key Challenges in Videogames, Serious Games and Gamification*. European Union. Luxembourg: Publications Office of the European Union, 2013.
- [4] Eric Blancaflor and Jan Martin Gomez San Miguel, Analyzing Digital Game Distribution in Gaming Industry: A Case Study, Proceedings of the 2nd Indian International Conference on Industrial Engineering and Operations Management Warangal, Telangana, India, August 16-18, 2022.
- [5] William Lehmus, Mikaela De Young, Viktor Sundqvist, *Physical Distribution in a Digital World: A study of the gaming industry*, Jönköping International Business School, 2012.
- [6] Williams. D, Structure and Competition in the U.S. Home Video Game Industry, *The International Journal on Media Management*, 2002, 4(1), pp 41-54.