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1. Introduction

ZDNet has reported that an online gambling firm has leaked information on over 108 million bets, containing personally identifiable information, payments, and withdrawals.



Figure 1 Logo of ZDNet (rocketreach, 2022)

According to Justin Paine, the security researcher who found the server, the data spilled from an Elasticsearch server that was left accessible online without a password (Cimpanu, 2019).

When asked "what is Elasticsearch?" some individuals may say "an index," "a search engine," "an analytics database," "a big data solution," "it's quick and scalable," or "it's like Google." These answers may either get you closer to an ah-ha moment or further perplex you, depending on your degree of acquaintance with this technology. However, all these responses are right, which is part of Elasticsearch's attractiveness.



Figure 2 Elasticsearch (Abueg, 2020)

Elasticsearch is a Java-based, distributed, open-source search and analytics engine based on Apache Lucene. Elasticsearch allows you to swiftly store, search, and analyse large amounts of data in near real-time, with results arriving in milliseconds. It can obtain quick search results because it searches an index rather than searching the text directly. It has a document-based structure rather than tables and schemas, and it has rich REST APIs for storing and finding data (Abueg, 2020).

The Elastic Stack (ELK)

The Elastic Stack, a collection of open-source technologies for data intake, enrichment, storage, analysis, and visualization, is centred on Elasticsearch. It's known as the "ELK" stack, which stands for Elasticsearch, Logstash, and Kibana, and now incorporates Beats. Users began utilizing Elasticsearch for log data and sought an easy way to ingest and view that data, even though it is a search engine at its heart (Abueg, 2020).



Figure 3 The Elastic Stack (ELK) (INSEA IT Writers, 2020)

These many components are frequently used to monitor, debug, and secure IT settings when used together (though there are many more use cases for the ELK Stack such as business intelligence and web analytics).

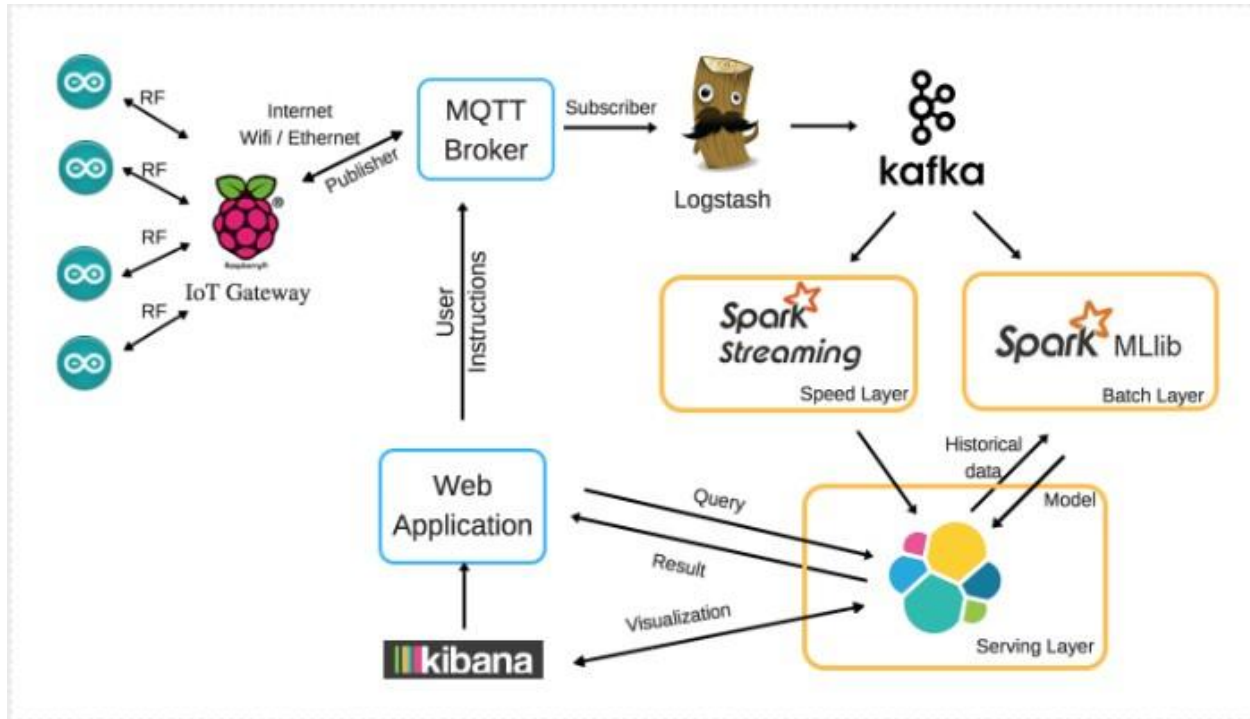


Figure 4 An ELK use case with IoT data (INSEA IT Writers, 2020)

Other third-party chrome extensions and applications, such as Search Guard for stack tracking, notifying, and protection, Alarm system for advanced analytics and going to add join functionality (to simulate the join between relational databases), Cerebro for snapshot management and cluster administration, and many others, can be added to finish and enlarge the stack's functionality (INSEA IT Writers, 2020).

Nowadays, respectable online casinos provide variety of thousands different games, and the variety of titles released is their greatest asset over traditional casinos. The greatest feature is that some of those slots seem to be from different software suppliers, yet they are all accessible at the same online casino (gamblingsites, 2022).

2. Background

Nearly 108 million data were exposed on the server, covering bets, winnings, deposits, and withdrawals, as well as credit card info.

An online gambling group's Elasticsearch server was left open to the public, with no password. Identities, locations, contact information, e - mail addresses, birth dates, credentials, current accounts, Network connections, a record of played games, last authentication information, browser history, and OS data were all stored on the hacked site.

Justin Pane, a security researcher, stumbled onto the unsecured Elasticsearch server. Pane discovered data from an online betting platform on the server, as well as data gathered from numerous web domains.

2.1. Research Details

Pane and ZDNet combined their analyses of the URLs in the user's data and determined that all the web domains were running online casinos. The exposed server's data contained URLs such as kahunacasino.com, azurcasino.com, easybet.com, viproomcasino.net, and others.



Figure 5 Curacao eGaming (curacao-egaming, 2021)



Figure 6 VIP room Casino (viproomcasino, 2022)

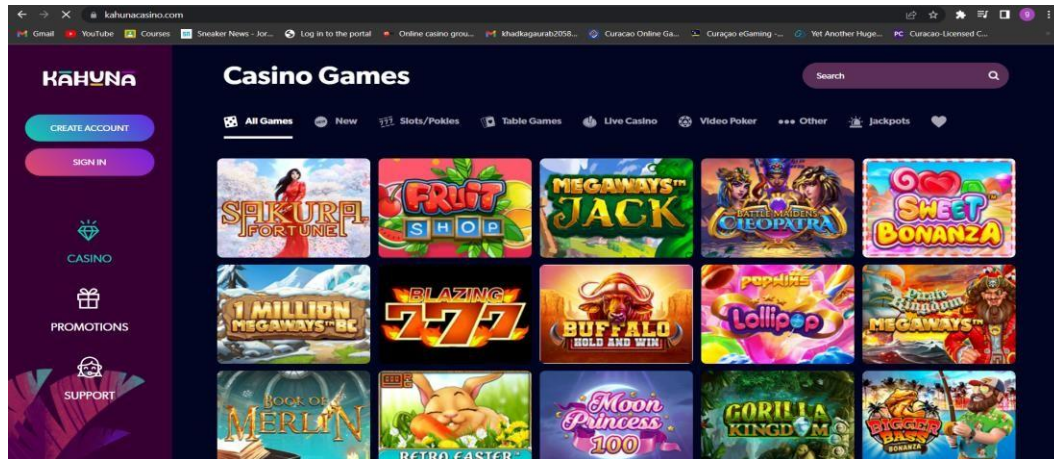


Figure 7 kahuna casino (Kahunacasino, 2022)

Many of the domains were registered by the same company, while others were held by firms situated in the same building or operating under the same eGaming license number, according to the investigation. This demonstrated that all the web domains were managed by the same entity.

However, credit card information was selectively concealed, and consumers' overall banking information was not revealed.

The server that was leaking information has been knocked down.

Neither of the web sites containing data Pane discovered in the ElasticSearch server responded to ZDNet. The leaking server, though, was confirmed to be shut offline and inaccessible to the general public on January 21, 2019.

"Finally, it's gone." "It's unknown if the client pulled it down or whether OVH did," Paine told ZDNet.

However, anybody with evil intent might have utilized information from the hacked server, such as the contact details of gamers who had recently won huge sums of money, to target individuals as part of a fraud or extortion plan (Cyware, 2019).

3. Legal Issues

A legal issue is something which occurs and requires the assistance of a defence attorney to resolve. The law responds to or resolves a question or problem.

This Curacao-based iGaming company adheres to the local legislation and rules that govern online gaming and online casinos. As a result, it is currently able to manage 11 online casinos at the same time, with more on the way (onlinecasinogroups, 2022).

3.1. Violation of The Fourth Amendment:

The Fourth Amendment to the United States Constitution states that "the right of the people to be secure in their persons, houses, papers, and effects against unreasonable searches and seizures shall not be violated," and that "no Warrants shall issue, except upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized" (Kim, 2017).

As a result, the data breach in Elasticsearch exposes the user's classified info and may result in legal action. Players' personal information is no longer private because of this data breach.

3.2. Identity theft

Hundreds to thousands of files, both from industry and government, contain an ordinary person's data. Everyone must have confidence in the security of their personal information. A data breach and subsequent abuse of the data might result from poor security. For instance, consider identity theft (autoriteitpersoonsgegevens, 2019).

3.3. Privacy legislation

The Dutch Data Protection Authority (Dutch DPA) increased its emphasis on enforcing privacy laws in 2019. The Dutch DPA levied a total of €108 million in enforcement actions.

Access to personal information, financial information, biometrics (fingerprints), and user access permissions were among the breaches (autoriteitpersoonsgegevens, 2020).

3.4. Access to the System without Authorization

To counter hacking, Congress created the Computer Fraud and Abuse Act (CFAA) in 1986 as an addendum to the first federal computer fraud legislation. The CFAA bans accessing a computer without authority or more than authorization, although it does not define

"without authorization." It's become a weapon ripe for misuse and exploitation against practically every area of computer activity, thanks to its draconian penalty systems and changeable rules.

The Eleventh Circuit maintained that using a computer to receive data for an inappropriate intent breach the CFAA, even if the individual is otherwise allowed to find the content. Justin Paine, a security researcher, sneaked into the system with permission, which is illegal. As a result, individuals might face penalties ranging from 1 to 5 years in prison for accessing a computer and collecting information under section 18 U.S.C. 1030 (Clifford W. Berlow & Jeffrey T. Green, 2019).

3.5. Misleading Business Practices

The Federal Trade Commission (FTC) is an independent government body tasked with enforcing provisions of the act. Clients can sue for compensation or damage claims if they are the victims of deceptive business activities. The claimants are not required to show that they had bad intentions. It is sufficient to demonstrate that the activity was unreasonable or misleading.

"Unfair or deceptive conduct or practices in or commercial code," according to Section 5(a) of the Federal Trade Commission Act. Unfair practices, according to the regulation, are those that create or are likely to cause injury to customers, are impossible to prevent, and in which the value of the system or service don't really exceed the dishonesty.

Fraudulent tactics are those where the vendor misunderstands or misinform the customer, and the deception is significant.

Elasticsearch may be held liable for breaking this legislation for the reasons mentioned:

- Unable to properly develop and manage security measures.
- Unable to report an unauthorized access in a reasonable timeframe.
- Unable to provide comprehensive and detailed facts (Mirande Valbrune, 2020).

4. Social Issues

A social issue or problem is anything that civilization has identified as a difficulty that is impeding society from performing at its best. It is critical to recognize that not everything that occurs in society is elevated to the status of a social issue. There are four aspects that appear to describe a social issue or crisis. Among them are:

- The general population should realize the issue.
- The current scenario goes beyond humanity's recognized ideals.
- A vast portion of the public sees the situation as a legitimate issue.
- The issue can be fixed or eased by residents and/or local resources working together (Millicent Kelly, 2022).

4.1. Reputational damage

A large - scale cyber assault on your company may be devastating. It can have an impact on your profits and your company's reputation and trustworthiness.

A consumer connection is incomplete without trust. Cyber assaults have the potential to harm your company's brand and destroy your consumers' faith in you. As a result,

- Customers are leaving
- sales reduction
- Profits are being cut

The consequences of a damaged reputation might influence your distributors as well as your collaborations, financiers, and other stakeholders in your company (nibusinessinfo, 2022).

4.2. Altered Business Practices

Cybercrime has more than a financial impact on enterprises. To guarantee that sensitive data is not exposed, businesses must reconsider how they gather and keep data. Many businesses have closed their part of digital due to concerns that they would not be able to fully protect themselves from hackers. Clients are also much more interested in understanding how companies they business do with manage security challenges, but they are more willing to favour companies that are open and outspoken about the safeguards they have put in place (LOGAN, 2021).

4.3. Disruption of Operations

Businesses usually incur administrative costs from assaults, such as the likelihood of a substantial delay in activities, which can lead to lost income, in addition to the immediate money losses.

Cyber attackers may restrict a corporation's routine operations in a variety of ways, including attacking computers with virus that deletes sensitive data or placing malicious script on a website that prevents access to the network.

So-called "hacktivists" have indeed been known to infiltrate government or international enterprise computer networks in the interest of exposing a great injustice or enhancing transparency (LOGAN, 2021).

4.4. Stolen Intellectual property

Product designs, technology, and marketing tactics are frequently as one of an organization's most significant resources. Per the intellectual property adviser Ocean Tomo, fixed resources accounted for 87 percent of the value of S&P 500 firms in 2015.

All this ip rights is kept on the clouds, where it is exposed to hackers. Almost a third of American businesses say their Ip has been stolen by a Chinese competitor in the last decade.

Protecting a firm from cyberattacks is expensive and can have a negative influence on the company's connection with its consumers. Organizations would have to keep one step ahead of cybercrime as it gets more complex (LOGAN, 2021).

4.5.Impacts ON Legal Ground

Individuals are expected to maintain the confidentiality of the private information they retain under information security and privacy legislation. It can be applied to both employees and consumers. Companies will be judged a failure in implementing security protocols unless you are discovered tampering with any of these requirements. It is a criminal infraction that can result in fines and legal liabilities (innefu, 2022).

5. Ethical Issues

When a moral conflict emerges in the workplace, ethical issues should be addressed. In other words, it is a situation in which a moral norm is called into doubt. When a choice, scenario, or conduct contradicts a society's moral norms, it is called an ethical dilemma. (myaccountingcourse, 2021).

The following are some of the ethical considerations raised by the incident:

5.1. Decision-Making and Ethics

Moral ideals and actions of individuals engaged, as well as professional standards, constitute the cornerstone of all security systems. That is, humans are both a component of the solution and most of the issue. Responsible decision-making, confidentiality, privacy, piracy, fraud & misuse, liability, copyright, trade secrets, and sabotage are just some of the security issues that a company could face. It is simple to sensationalize these problems by using true horror stories; however, dealing with the underlying ethical difficulties is more challenging (Idaho State University, 2021).

5.2. Inadequate to maintain user privacy

Addressing the privacy problems that come with data gathering and use is the first step toward using data responsibly. In the midst of constant attempts to tighten cybersecurity and close privacy holes, choosing the wrong data privacy approach may cost company billions in fines and damages. Meanwhile, hacking attempts have been steadily increasing.

Failure to secure customer data exposes consumers and businesses alike to a variety of dangers. The penalty of badly handled data is generally too high for firms to bear, from compliance failure fines to a ruined brand. Instead, businesses should commit to using data in an ethical manner (Fletcher, 2022).

5.3. Goals that are unrealistic and conflicting

A company sets a target that appears ridiculous, even unattainable—it may be a monthly expected sales or a production planning ratio. While still not inherently immoral (and besides, possessing motivated management with ambitious set objectives is critical to development and success), how workers, as well as some managers, just get on with accomplishing the objective may create ethical concerns. Unrealistic goals can result to executives applying extra stress on their workforce, who may contemplate cutting shortcuts or breaking ethical or legal norms to achieve them. Cutting ethical corners seldom pays off, and if the entire organization is failing to reach targets, corporate

management will require the information to reassess those objectives and re-evaluate performance (michiganstateuniversityonline, 2022).

5.4.Abuse and Fraud

Unauthorized activity can be carried out in a special environment created by the internet. Theft, fraud, misappropriation, and blackmail are some of the conventional names for offenses in this area. The robbery of money through digital communication, the theft of financial instruments, the theft of services, and the theft of valuable information are all examples of computer-related fraud (Idaho State University, 2021).

In any case, if a scam has been found, the corporation committing the fraud will face significant financial penalties. Any accusation of fraud may create disruption with such a company's equity and prospects, from public perception to federal investigations of legal misconduct (Newton, 2021).

5.5.Misuse of legal data

The worst of the financial disasters in history have been attributed to an unethical use to information. Consider the case of WorldCom. This corporation cheated investors by manipulating financial data on income statements and balance sheets. WorldCom cost these investors billions of dollars as a result of data manipulation, and the corporation racked up about \$4 billion in accounting fraud.

These kinds of scandals tarnish the credibility of any organization that gathers and uses data. Data may be utilized ethically, contrary to the popular notion. Data, by its very nature, helps nearly every agency's quality and accurate gains. Data reflects facts, after all (Fletcher, 2022).

6. Professional Issues

Professional ethics are rules that regulate a person's or a group's behavior in the workplace. Professional ethics, like values, establish guidelines for how an individual should interact with other individuals and organizations in each situation.

For people pursuing a career in immigration consulting, the Code is an example of a formalized set of professional principles (Immigration advisers authority, 2022).

The following are some of the ethical considerations raised by the incident:

6.1. Due to a problem with website certification renewal, sales were loss

According to a recent poll, about 90% of consumers stop the purchase process when they receive a website expiry notification, while roughly 72% prefer to cancel the order right away. An expired Certificate authority, in addition to raising operational expenses, results in a significant drop in online sales.

When visitors are confronted with an expired certificate on a website, the brand's reputation is generally severely harmed. Customers become concerned when they are unable to make any online purchases because their bank information may have been hacked. Even if the data sent between servers and client computers is securely secured, the retention value diminishes as users lose faith on the website. They do so for excellent reasons. When a website displays an outdated certificate notice, it is impossible to establish if the entities taking ownership of the domains are indeed the proprietors (comodossstore, 2022).

6.2.A lack of clear guidance

One of the most prevalent organizational issues is a lack of direction, which can be caused by two factors:

The organization's leader or leaders barely mention or design a purposeful future path or plan, or they fail to deliver an unified message about the strategic plan to all members. There are several actions to carry out, and the organization lacks the critical coordination to acquire the traction required to assist the company reform, adapt, and shape the future—actions that would assure the company's long-term, continuous growth. To put it another way, so many processes and persons have no idea how or why they are important (Stowell, 2022).

6.3. Occurrence of Mapping in Elasticsearch

Elasticsearch uses mapping, also known as schema definitions, to appropriately handle data and categorize it. Mapping in Elasticsearch determines the data types for fields in a document, such as date, long, and string.

Elasticsearch employs dynamic mapping to estimate the field's type in circumstances when an indexed document has a new field with no defined data type, changing it from one type to another as needed. Elasticsearch will issue the "mapper parsing exception failed to parse" exception if this conversion is not successful. If there is too many of these errors, indexing throughput will suffer, resulting in delays in reading new data (opster, 2020).

6.4. Ineffective Teams

Teams fail for a variety of reasons. Blending diverse personalities into cohesive and unified teams is extremely difficult. Working with a varied group of people will inevitably result in disagreements. While this is challenging, it is not impossible. Various tools and evaluations have been created over time to aid with team building and management by getting to know a person's personality and habits. Ensure that your organization's teams have a clear goal, and that open communication is encouraged to assist members interact effectively (Cabrera, 2021).

6.5. Failure to develop key competencies and behaviours.

We frequently see a lot of industrious people with excellent intentions in our work with organizations. Despite their industry experience, technical talent, and subject-matter expertise, many executives find it difficult to build a high-performance group.

Leading and managing a company is a difficult endeavour that necessitates a diverse set of abilities. Leaders must not just play to their inherent abilities, but they must also constantly look for methods to better their own performance and conduct.

An organization's potential will be seriously hampered without ongoing development. In other words, if leaders do not consistently lift their game, they will drain an organization's vitality and employee engagement (Stowell, 2022).

7. Conclusion

This paper has major implications and lessons learnt for dealing with online security lessons and cybersecurity force setup. To avoid legal repercussions and an unfavorable public perception of the company, it is vital to disclose and discover detected data breach instances as soon as possible, as per consistency rules.

On the server, about 108 million records were exposed, including bets, earnings, deposits, and withdrawals, as well as credit card information. The compromised site saved identities, locations, contact information, e-mail addresses, birth dates, passwords, current accounts, network connections, a history of played games, last authentication information, browser history, and OS data.

There are a lot of things to learn. Device and cyber security are crucial in our hyper-connected world. Cyber security must be prioritized by organizations. Until then, major data breaches will continue. Elasticsearch should have taken the following measures:

- Enable authentication so that no one can use Elasticsearch without first logging in.
- Enable TLS to ensure that no one may listen in on Elasticsearch data as it travels via its network.
- Connect Elasticsearch and client services via private networking.
- Nginx authentication and SSL/TLS configuration.
- Set up notifications and keep an audit trail.
- Creating hierarchies and protocols.
- Conduct security awareness training for your employees.
- Create a cyber-breach reaction strategy.
- Regularly update your software.

Students benefited from the assessment on this topic not only from an IT standpoint, but also from a corporate perspective, because it immensely tries to teach people about great significance of important subjects such as legal issues, ethical issues, professional issues, and social issues, and how they would play a major role in the appropriate functioning of the Company.

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