

# Final Report



# Smart Internz

Technology Stack: **AI for Cybersecurity with IBM Qradar**

Project Title: **Mastering Qradar Deployment: Best Practices for Seamless Implementation**

Team ID: LTVIP2024TMID13856

Team No: 10

Team Members:

1. Nayanapatruni Santosh Kumar
2. Kallemputi Sirisha
3. Batthi Akhila
4. Killi Bala Kiran
5. Korada Dhana Laxmi

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## **INTRODUCTION**

In the vast expanse of digital world, the persistent threat of malware looms large, necessitating vigilant measures for identification and containment. Recognizing the pressing need for a proactive defense system, a pioneering project has emerged, introducing a dedicated online platform tailored for the detection and categorization of malicious software.

The AI engine serves as an intelligent guardian, employing advanced algorithms and machine learning techniques to dissect and interpret the behavior and structure of uploaded files. Through the seamless amalgamation of technology and cybersecurity, this platform generates detailed reports.

Powered by an advanced AI model, this project stands at the frontier of cybersecurity, providing a robust solution for the identification and comprehension of malicious entities.

The website's goal is to equip users with understanding of potential security threats lurking within their files, empowering them to take prompt and informed actions. By leveraging the prowess of artificial intelligence, this initiative aligns with the ongoing endeavor to combat cyber threats effectively.

Its unique approach signifies a leap forward in the realm of digital defense, harnessing cutting-edge technology to proactively safeguard users against an evolving landscape of cyber vulnerabilities. It contributes to understanding and tackling the evolving face of threats.

## **ABSTRACT**

This project “**MASTERING QRADAR DEPLOYMENT: BEST PRACTICES FOR SEAMLESS IMPLEMENTATION**” delves into the intricacies of deploying IBM Qradar with a focus on achieving optimal performance and seamless integration within an organization security ecosystem. Through a structured approach, participants will learn how to install, configure and customize QRadar to meet their organization’s unique security requirements. The project covers key areas such as data source integration, rule creation, offense management, and system optimization, providing participants with a comprehensive understanding of QRadar’s capabilities and functionalities. By following industry best practices and leveraging real world scenarios, participants will gain practical insights into QRadar deployment and enhance their ability to defend against evolving cyber threats. Through hands-on exercises and experimentation, participants will acquire the skills and knowledge necessary to deploy QRadar effectively and safeguard their organization’s digital assets against cyber-attacks.

The primary focus of the first deployment example is to describe a single All-in-one appliance deployment for a medium-size company. Later examples describe the deployment options as the company expands. The examples describe when to add QRadar components, such as Flow process, Event collectors, data nodes and when you might need to co-locate specific components.

The required for QRadar deployment depend on the capacity of chosen deployment to both process and store all the data that want to analyze the network.

# EMPATHY MAP

Topic: Mastering Qradar deployment: Best practices for seamless implementation

<b>What they say?</b> <ul style="list-style-type: none"><li>• I need to understand qradar deployment process.</li></ul>	<b>What they think?</b> <ul style="list-style-type: none"><li>• I want to ensure I'm implementing qradar effectively to enhance our security posture.</li></ul>
<b>What they hear?</b> <ul style="list-style-type: none"><li>• Advice from colleagues, testimonials from other users, warnings about improving security measures.</li></ul>	<b>What they feel?</b> <ul style="list-style-type: none"><li>• Determined to succeed anxious about potential mistakes excited about improving security.</li></ul>

<b>Pains</b> <ul style="list-style-type: none"><li>• Concerns about complexity of deployment</li></ul>	<b>Gains</b> <ul style="list-style-type: none"><li>• Confidence in their ability to deploy QRadar effectively.</li></ul>
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## **BRAINSTORMING AND IDEA PRIORTIZATION**

Brainstorming for the topic of Mastering qradar deployment best practices for seamless implementation is a dynamic exploration into the evolving world of cybersecurity threats. It requires a systematic approach starting with a comprehensive understanding of its features and capabilities. Begin by assessing your organization's security needs, compliance requirements, and existing infrastructure to tailor QRadar deployment accordingly. Design an optimal deployment topology considering factors such as network architecture and scalability. Prioritize integrating critical data sources into QRadar, tuning correlation rules to reduce false positives, and customizing the platform to align with your organization's unique requirements. Develop thorough training materials and documentation for users and administrators to ensure effective utilization. Integrate QRadar with other security tools and platforms to enhance overall security posture, and optimize performance through resource allocation and data management best practices. Establish processes for continuous monitoring and improvement, including incident response planning and compliance adherence. Engage with the QRadar user community and leverage vendor support and training resources to stay informed about updates and best practices. Finally, conduct risk assessments to prioritize deployment efforts based on potential impact on security and operational efficiency.

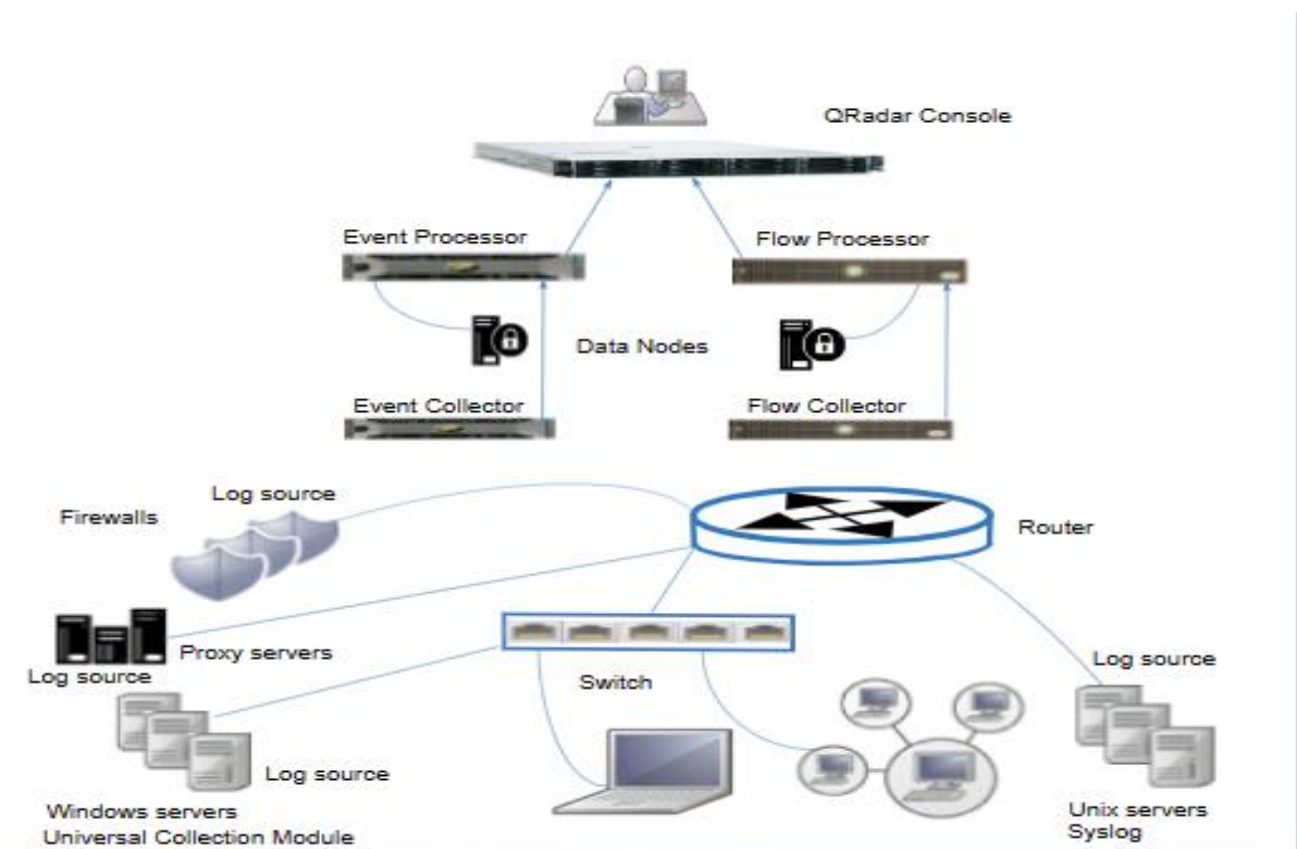
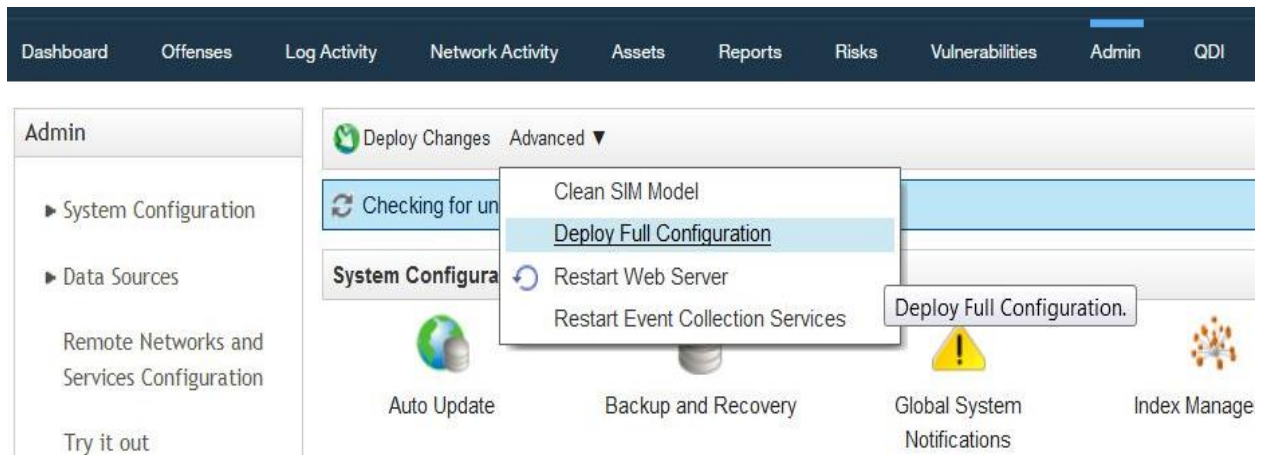
## **Step- 1: Team gathering, collaboration and select the problem statement**

In this brainstorming phase, we have identified the possible problems that might be difficult to tackle.

We have ended up with the following problem statements

1. What are the key objectives we aim to achieve by mastering qradar?
2. How does qradar deployment align with our overall cybersecurity strategy and priorities?
3. What specific challenges or pain points are we currently facing?
4. How will mastering qradar deployment enhance our ability to respond to security threats?
5. What are the potential risks associated with mastering qradar deployment?

## Step 2 : Brainstorming, idea listing grouping





## **STAGE- 1**

**Title of the Project:** Mastering qradar deployment:

Best practices for seamless implementation

### **Overview:**

Mastering QRadar deployment entails a meticulous approach that incorporates best practices for seamless implementation. It begins with a comprehensive understanding of QRadar's capabilities, encompassing its log collection, correlation, offense management, and reporting features. To ensure a smooth deployment, start by conducting a thorough assessment of your organization's security requirements, compliance mandates, and existing infrastructure. This assessment lays the groundwork for designing an optimal deployment topology, whether centralized or distributed, considering factors like scalability and high availability.

Data source integration emerges as a critical step, prioritizing the incorporation of essential sources such as firewalls, intrusion detection systems, and endpoint security solutions into QRadar. Fine-tuning correlation rules becomes paramount to minimize false positives and prioritize offenses based on their severity and relevance. Additionally, customization features should be explored to tailor QRadar to the specific needs

of your organization, including the creation of custom event properties, rules, and reports.

User training and documentation play pivotal roles in ensuring effective utilization of QRadar's capabilities across the organization. Develop comprehensive training materials and documentation for both users and administrators to facilitate a smooth transition and maximize the platform's potential. Moreover, fostering community engagement through forums and user groups can provide valuable insights and best practices for mastering QRadar deployment.

Integration with other security tools and platforms amplifies QRadar's effectiveness, whether it's integrating with SIEMs, SOARs, or threat intelligence feeds. Performance optimization is another crucial aspect, involving fine-tuning hardware resources, optimizing event processing, and implementing best practices for storage management.

Continuous monitoring and improvement are essential for maintaining QRadar's efficacy over time. Establish processes for ongoing monitoring of its performance, including regular reviews of offenses, rule effectiveness, and system health. Incident response planning should also be prioritized, leveraging QRadar's capabilities for rapid detection, investigation, and response to security incidents.

## List of Teammates:

S. No	Name	College	Contact
1.	Nayanapatruni Santosh Kumar	Sri Balaji Degree College	<a href="mailto:santoshsanthu7864@gmail.com">santoshsanthu7864@gmail.com</a>
2.	Kallempudi Sirisha	Sri Balaji Degree College	<a href="mailto:kallempudisirisaha70@gmail.com">kallempudisirisaha70@gmail.com</a>
3.	Batthi Akhila	Sri Balaji Degree College	<a href="mailto:bathiakhila296@gmail.com">bathiakhila296@gmail.com</a>
4.	Killi Bala Kiran	Sri Balaji Degree College	<a href="mailto:kksalakiran@gmail.com">kksalakiran@gmail.com</a>
5.	Korada Dhana Laxmi	Sri Balaji Degree College	<a href="mailto:koradadhanalaxmi6@gmail.com">koradadhanalaxmi6@gmail.com</a>

## REPORT ON PRACTICE WEBSITE

**Vulnerability Name:** Disclosing Web Server Type

**CWE:** CWE-200

**OWSAP Category:** A03:2021 Sensitive Data Exposure

**Business Impact:** Disclosing the web server type can pose a security risk by providing potential attackers with information that may be exploited. This disclosure can lead to more targeted attacks and increases the risk of vulnerabilities being exploited.

**Vulnerability Name:** PHP Unsupported Version

**CWE:** CWE-661

**OSWAP Category:** A06-2021-Vulnerable and Outdated Components.

**Business Impact:** Anyone can connect to the NS Client and retrieve sensitive information such as process, service states.

## a. Vulnerability: SQL Injection

**CWE:** CWE-89

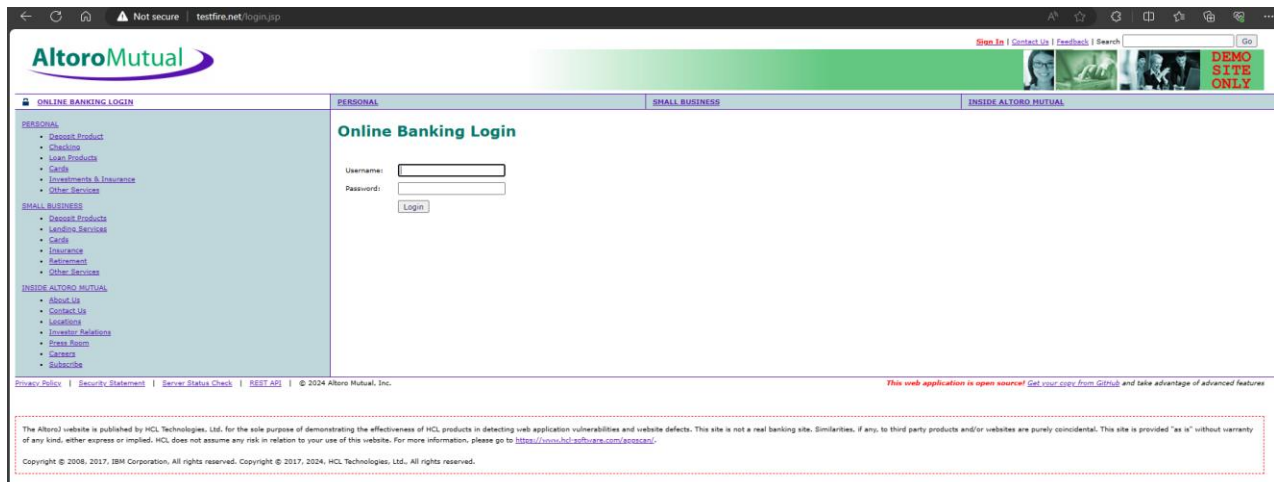
**OSWAP:** A03 2021-Injection

**Business Impact:** SQL injection can have severe consequences, including data breaches, damaged reputation. Attackers exploit vulnerabilities to gain access to data base, steal sensitive information.

**Vulnerability Path:** <http://testfire.net/login.jsp>

**Steps:**

### 1. Access the URL



2. Enter the username with 'or1=1--+' and password with 1111.

← → ↻ 🏠 ⚠ Not secure | testfire.net/login.jsp

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**Online Banking Login**

Username:

Password:

3. Click on Login.

← ↻ 🏠 ⚠ Not secure | testfire.net/bank/main.jsp

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**I WANT TO ...**

- [View Account Summary](#)
- [View Recent Transactions](#)
- [Transfer Funds](#)
- [Search News Articles](#)
- [Customize Site Language](#)

**ADMINISTRATION**

- [Edit Users](#)

**Hello Admin User**

Welcome to Altoro Mutual Online.

View Account Details:

**Congratulations!**

You have been pre-approved for an Altoro Gold Visa with a credit limit of \$10000!

Click [Here](#) to apply.

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**b. Vulnerability:** Cross Site Scripting (XSS)

**CWE:** CWE-87

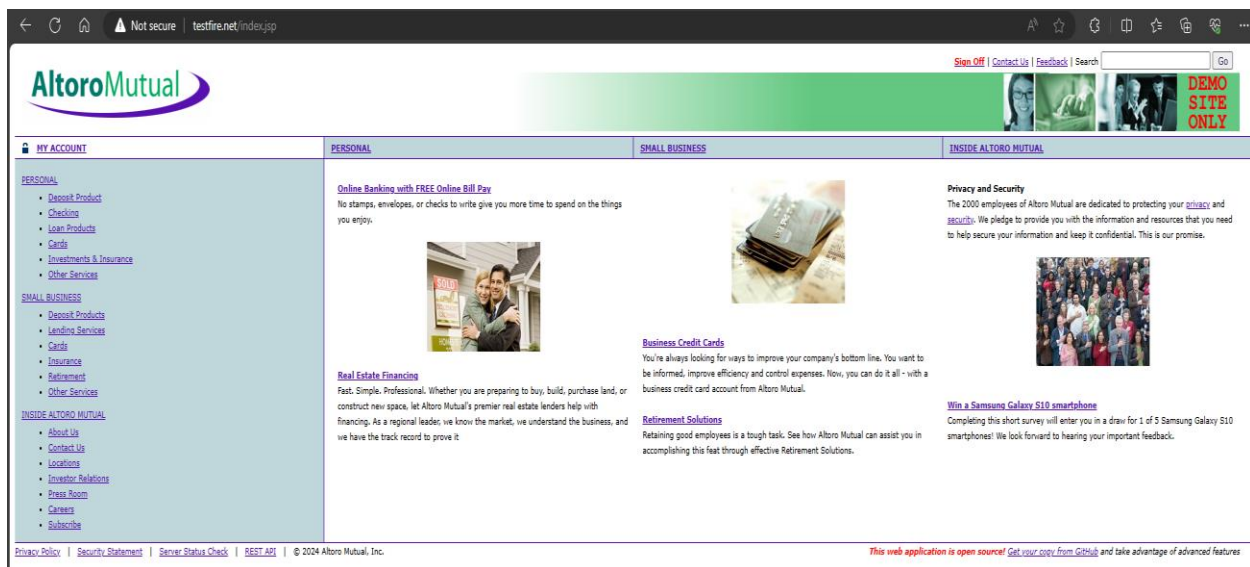
**OWSAP Category:** A03 2021-Injection

**Business Impact:** Attackers can use XSS to execute malicious scripts on the users in the case of victim browsers. Since the browser cannot know if the script is trustworthy or not, the script will be executed and the attackers can hijack session cookies, deface website.

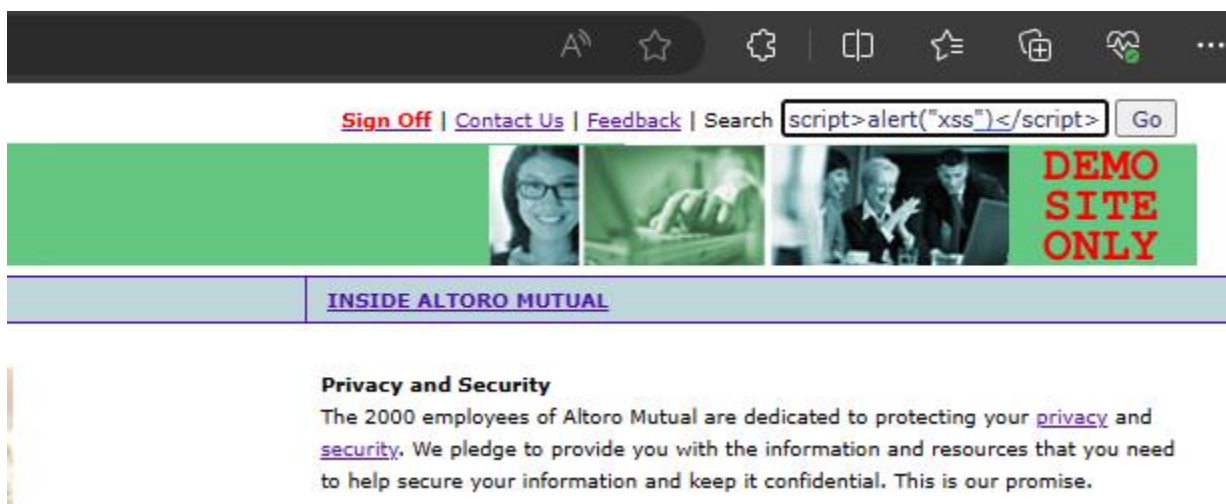
**Vulnerability Path:** <http://testfire.net/index.jsp>

**Steps to Reproduce:**

- Go to search bar.

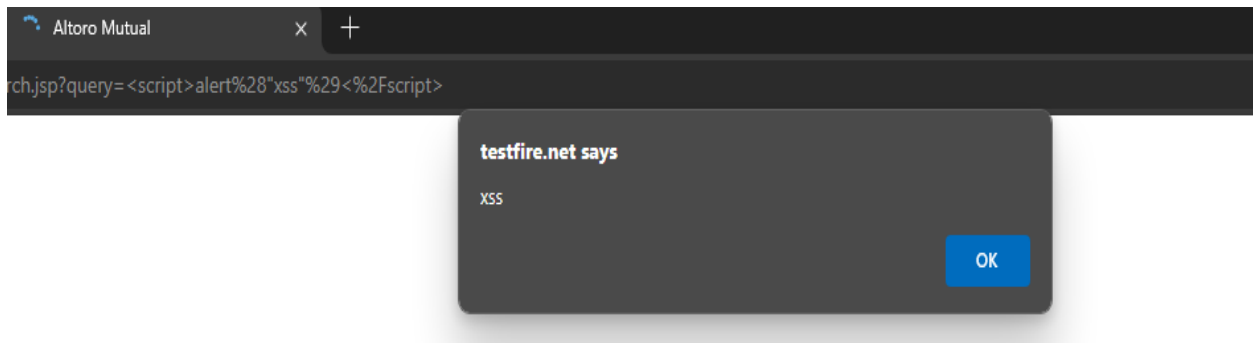


- Execute any JavaScript code.



- Click on go.





The entered code has been executed on the website.

**c. Vulnerability:** Personal Identifiable Information

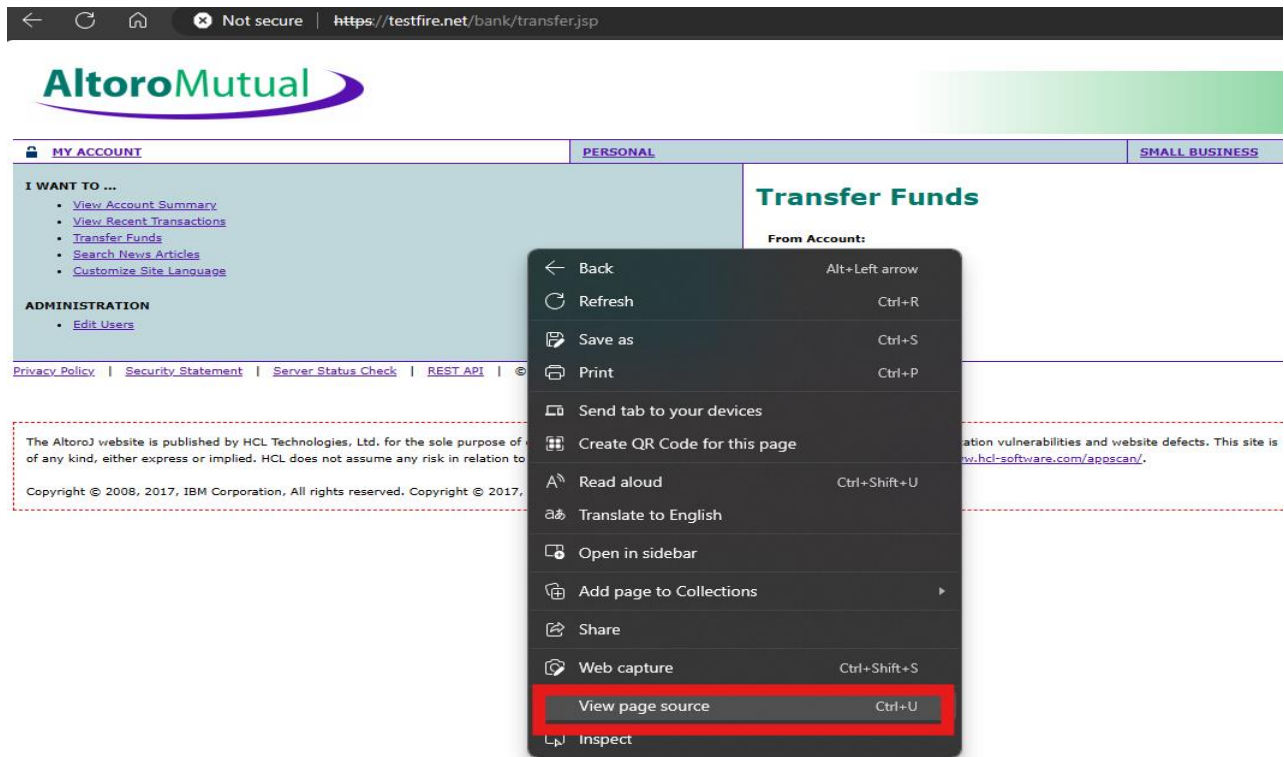
**CWE:** CWE-319

**OWSAP Category:** A02:2021 Cryptographic Failures

**Business Impact:** PII can lead to legal fines, reputation damage, cybersecurity costs, competitive and operation disruption, financial losses and long-term liability of robust data protection.

**Vulnerability path:** <https://testfire.net/bank/transfer.jsp>

1. Navigate the given URL, then view page source code.
2. Scroll down for Credit card details are shown explicitly.



```
130 <option value="800006" >800006 Savings</option>
131 <option value="800007" >800007 Checking</option>
132 <option value="4539082039396288" >4539082039396288 Credit Card</option>
133 <option value="4485983356242217" >4485983356242217 Credit Card</option>
134
135 </select>
136 </td>
137 </tr>
138 <tr>
139 <td><strong>To Account:</strong></td>
140 <td>
141 <select size="1" id="toAccount" name="toAccount">
```

d. **Vulnerability:** Insecure Direct Object Reference

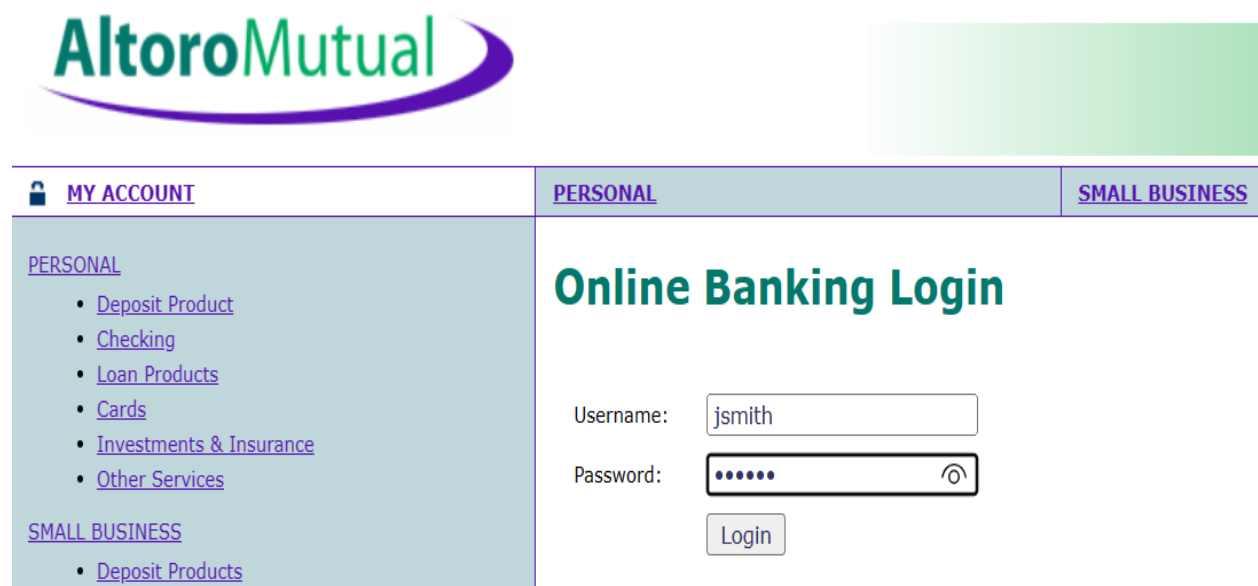
**CWE:** CWE-639

**OWASP Category:** A01 Broken Access Control

**Description:** The system authorization functionality does not prevent one user from gaining access to another user data or record by modifying the data.

**Vulnerability Path:** <http://testfire.net/login.jsp>

1. Navigate into given URL and login.



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**SMALL BUSINESS**


- [Deposit Products](#)

**Online Banking Login**

Username:

Password:




[MY ACCOUNT](#)

[PERSONAL](#)

[SMALL BUSINESS](#)

I WANT TO ...

- [View Account Summary](#)
- [View Recent Transactions](#)
- [Transfer Funds](#)
- [Search News Articles](#)
- [Customize Site Language](#)

ADMINISTRATION

- [Edit Users](#)

## Hello John Smith

Welcome to Altoro Mutual Online.

View Account Details:

800000 Corporate

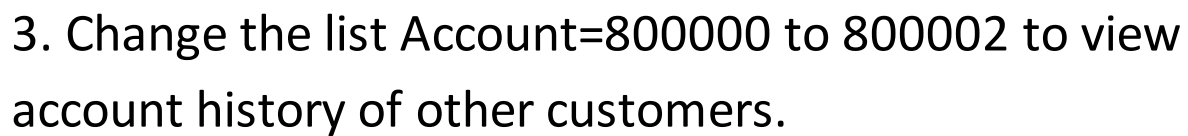
GO

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**Severity:** High

**Description:** According to its version, the installation of PHP on the remote host is no longer supported.

**Business Impact:** Anyone can connect to the NSClient and retrieve the information, like memory usage and service states.

**Vulnerability path:** <https://www.flipkart.com>

1. Nessus Scan reveals the PHP version supporting the website.

```
Source : X-Powered-By: PHP/7.4.33
Installed version : 7.4.33
End of support date : 2022/11/28
Announcement : http://php.net/supported-versions.php
Supported versions : 8.0.x / 8.1.x
```

## Recommendations

- Find it on your network and fix it as soon as possible.
- Upgrade to the latest version of PHP.

b. **Vulnerability:** Missing Anti-Click jacking tokens.

**OWASP:** A04:2021 Insecure Design

**CWE:** CWE-451

**Severity:** High

**Business Impact:** The impact of Clickjacking has several ways hackers can use the redirected clicks for their own gain. A common form of clickjacking involves mirroring a login and password form on website.

**Description:** The UI does not properly represent critical information to the user, allowing the information. This is often a component in pushing attacks.

**Vulnerability path:** <https://www.flipkart.com>

```
The remote web server type is :  
  
awselb/2.0
```

c. **Vulnerability:** Disclosing Webserver type

**CWE:** CWE-200

**Severity:** Low

**OWASP:** A03:2021 Sensitive data exposure

**Description:** The product exposes sensitive information to an authorized have access to that information.

**Vulnerability path:** <https://www.flipkart.com>



```
The remote web server type is :  
nginx/1.22.1
```

d. **Vulnerability:** Cleartext transmission of Credentials

**CWE:** CWE-319

**OWASP Category:** A05:2021 Security Misconfiguration.

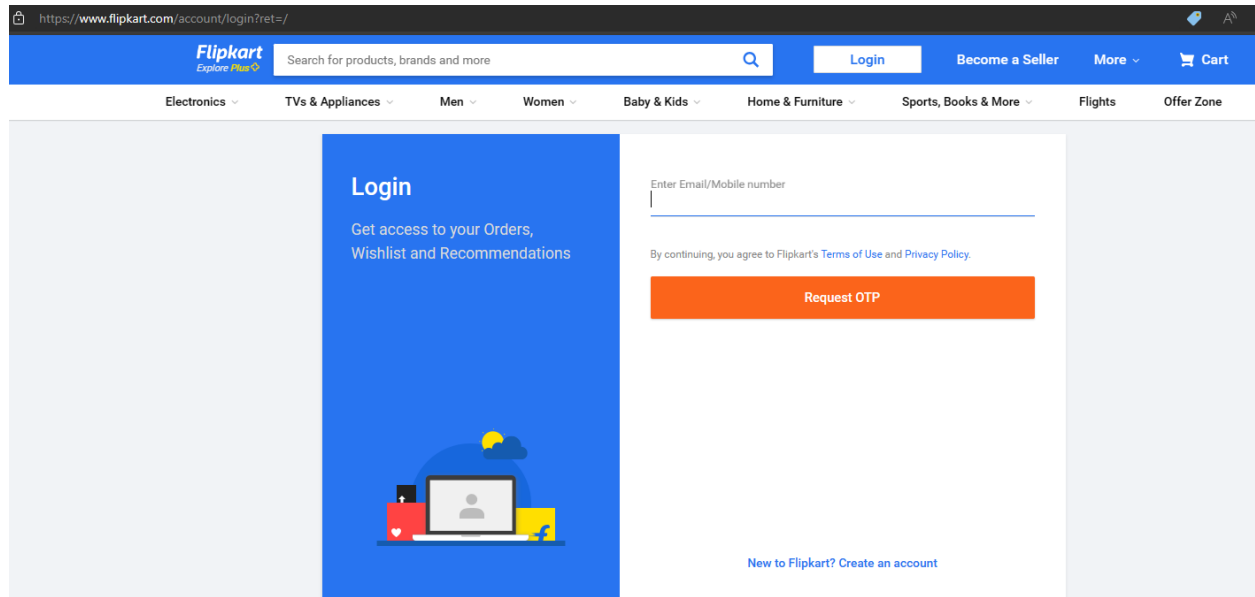
**Severity:** High

**Description:** The product transmits sensitive data in clear text in a communication channel that can be sniffed.

**Business Impact:** Transmitting credentials in clear text can result in unauthorized access, data breaches, loss of customers trust, legal consequences and reputation damage, impacting on financial security.

**Vulnerability Path:**

<https://www.flipkart.com/account/login?ret=>



Vulnerability Name: SMTP server detection

Severity: None

Plugin ID: 10263

Port: 456/tcp/smtp

Description: The remote host is running a mail server on this port. Since SMTP servers are the target of spammers, you need to disable it if you don't use it.

Solution: Disable this service if you don't use it, or filter incoming traffic to this port.

## **STAGE-2**

### **➤ Installation of QRadar:**

#### **1. System Requirements Check:**

- Ensure that your system meets the minimum hardware and software requirements specified by IBM for QRadar installation.

#### **2. Download Software:**

- Obtain the QRadar installation files from the IBM website or your designated source.

#### **3. Prepare Environment:**

- Prepare the servers and network infrastructure where QRadar will be installed.
- Assign IP addresses, configure DNS settings, and ensure network connectivity.

#### **4. Install Dependencies:**

- Install any prerequisite software or dependencies required by QRadar. This may include Java Runtime Environment (JRE), PostgreSQL, and others.

#### **5. Install QRadar Software:**

- Run the installer provided by IBM.

- Follow the on-screen instructions to install the QRadar software package.
- Specify installation directories, database settings, and other configurations as needed.

#### 6. Configure Network Settings:

- Configure network settings such as IP addresses, subnet masks, gateways, and DNS servers within the QRadar interface.

#### 7. Initial Setup Wizard:

- Launch the QRadar Console and go through the initial setup wizard.

#### 8. License Activation:

- Activate your QRadar license using the license key provided by IBM or your vendor.
- This typically involves logging into the License Key Center and entering the provided key.

#### 9. Configure Data Sources:

- Configure QRadar to receive data from various sources such as logs, events, and flows.
- This may involve configuring syslog, SNMP, NetFlow, and other data source protocols.

### 10.Tuning and Optimization:

- Fine-tune QRadar configurations to optimize performance and accuracy.
- Configure rules, filters, and policies to meet your organization's security and compliance requirements.

### 11.Integrate with Other Systems:

- Integrate QRadar with other security systems and tools such as SIEMs, IDS/IPS, endpoint protection platforms, and threat intelligence feeds.

### 12.Testing and Validation:

- Perform testing to ensure that QRadar is receiving, processing, and correlating data correctly.
- Verify that alerts, offenses, and reports are generated as expected.

### 13.Training and Documentation:

- Train administrators and analysts on how to use QRadar effectively.
- Document configurations, procedures, and troubleshooting steps for future reference.

#### 14. Monitoring and Maintenance:

- Set up monitoring tools to keep track of QRadar's health and performance.
- Implement regular maintenance tasks such as software updates, backups, and security patches.

#### 15. Continuous Improvement:

- Continuously monitor QRadar's effectiveness and adjust configurations as needed.
- Stay updated with the latest security threats and vulnerabilities to enhance QRadar's capabilities.

### ➤ **What is Mastering QRadar Deployment?**

Mastering QRadar deployment is a comprehensive process that involves proficiently implementing and configuring IBM's QRadar Security Information and Event Management (SIEM) system to effectively safeguard an organization's IT infrastructure. It begins with the meticulous installation and setup of QRadar, ensuring compatibility with hardware or virtual environments while configuring essential network settings and storage requirements. Following installation, configuration becomes paramount, encompassing the

integration of various data sources like logs, network flows, and vulnerability data to fuel QRadar's analytical capabilities. Fine-tuning and optimization efforts are then undertaken to refine QRadar's performance, minimizing false positives, enhancing detection accuracy, and aligning with the organization's security policies. Integration with other security tools and platforms bolsters QRadar's capabilities, enriching its threat intelligence and incident response mechanisms. Customization further tailors QRadar to specific organizational workflows, facilitating the creation of personalized dashboards, reports, and alerts. Effective incident response hinges on leveraging QRadar's real-time detection and analysis capabilities to swiftly identify and mitigate security threats. Routine maintenance tasks ensure the longevity and security of the QRadar deployment, while ongoing training and documentation efforts empower personnel to leverage QRadar effectively in safeguarding the organization's digital assets. Through a combination of technical expertise, security knowledge, and hands-on experience, mastering QRadar deployment equips organizations with a robust defense against cyber threats. It involves understanding not only how to configure and operate QRadar but also how to leverage its capabilities to improve an organization's overall security posture.

➤ **Advantages of Mastering QRadar Deployment:**

1.Comprehensive Security Monitoring: QRadar provides a centralized platform for monitoring security events across an organization's IT infrastructure, including networks, servers, applications, and endpoints. Mastering its deployment allows for comprehensive monitoring of potential security threats.

2.Real-time Threat Detection: QRadar's advanced analytics and correlation capabilities enable real-time detection of security incidents, including potential cyber attacks, unauthorized access attempts, and insider threats. Effective deployment ensures timely identification and response to such incidents.

3.Incident Response and Forensics: QRadar provides tools for incident response and forensic analysis, allowing security teams to investigate security incidents, gather evidence, and understand the root causes of security breaches. Mastering its deployment enhances an organization's ability to conduct thorough investigations.

4.Customization and Integration: QRadar offers flexibility for customization and integration with other security tools and technologies. Mastering its deployment enables organizations to tailor the solution to their specific security requirements and integrate it seamlessly into their existing security infrastructure.



5.Compliance Management: QRadar helps organizations meet regulatory compliance requirements by providing features for logging, reporting, and auditing security events. Mastering its deployment facilitates compliance management by ensuring accurate and comprehensive logging of security-related activities.

➤ **Disadvantages:**

1.Complexity: Deploying and mastering QRadar can be complex and time-consuming, especially for organizations with limited expertise in SIEM technology. The platform's rich feature set and advanced capabilities may require extensive training and experience to fully leverage.

2.Resource Intensive: QRadar deployment typically requires significant resources in terms of hardware, software, and personnel. Organizations may need to invest in dedicated hardware appliances, storage infrastructure, and skilled personnel to manage and maintain the solution effectively.

3.Cost: The cost of acquiring, deploying, and maintaining QRadar can be substantial, particularly for small and medium-

sized organizations with limited budgets. Licensing fees, hardware costs, and ongoing maintenance expenses can contribute to the overall cost of ownership.

4.Tuning and Maintenance: To ensure optimal performance and accuracy, QRadar requires ongoing tuning and maintenance. Security teams need to continuously fine-tune correlation rules, adjust thresholds, and update the system to address emerging threats and vulnerabilities.

5.Skill Dependency: Effective deployment and mastery of QRadar depend on the availability of skilled personnel with expertise in SIEM technology, cybersecurity, and IT infrastructure. Organizations may face challenges in recruiting and retaining qualified professionals with the necessary skill sets.

In summary, mastering the deployment of IBM QRadar offers significant benefits in terms of enhanced security monitoring, threat detection, and incident response capabilities. However, organizations need to consider the complexity, resource requirements, and ongoing maintenance associated with QRadar deployment as potential challenges.

## **CONCLUSION**

Mastering the deployment of IBM QRadar is a strategic endeavor that promises substantial benefits for organizations seeking to enhance their cybersecurity posture. Throughout the project, it became evident that QRadar offers comprehensive security monitoring, real-time threat detection, and advanced incident response capabilities. By leveraging its customizable features and integration capabilities, organizations can tailor the solution to their specific security requirements and seamlessly integrate it into their existing infrastructure.

However, the journey to mastering QRadar deployment is not without its challenges. The complexity of the platform, resource-intensive nature, and associated costs require careful planning and investment. Moreover, ongoing tuning and maintenance are essential to ensure optimal performance and accuracy, demanding a skilled and dedicated team of cybersecurity professionals. Despite these challenges, the rewards of mastering QRadar deployment are substantial. Organizations can benefit from improved visibility into their IT environment, timely detection of security incidents, and effective response to emerging threats.

## **FUTURE SCOPE**

The future scope for mastering QRadar deployment revolves around evolving best practices that ensure seamless implementation and ongoing optimization of the platform to address the dynamic landscape of cybersecurity threats. As technology advances and cyber threats become more sophisticated, organizations must continually adapt their security strategies, and QRadar deployment is no exception. Moving forward, the emphasis will be on leveraging automation and artificial intelligence (AI) capabilities within QRadar to enhance threat detection and response. This includes implementing machine learning algorithms to identify anomalous behavior patterns and automate the correlation of security events to prioritize alerts for faster response times. Additionally, integrating QRadar with emerging technologies such as cloud-native security solutions and Internet of Things (IoT) device management platforms will be crucial for extending security coverage to new digital frontiers.

Furthermore, future best practices for mastering QRadar deployment will focus on enhancing collaboration and information sharing among security teams. This entails integrating QRadar with collaboration tools and establishing workflows that facilitate seamless communication and

coordination between security analysts, incident responders, and other stakeholders. Moreover, the adoption of a proactive and intelligence-driven approach to security will become increasingly important, with organizations harnessing threat intelligence feeds and vulnerability management platforms to enrich QRadar's detection capabilities and stay ahead of emerging threats.

Another key aspect of future QRadar deployment best practices will involve streamlining compliance management processes using advanced reporting and auditing features. Organizations will seek to automate compliance workflows within QRadar, enabling continuous monitoring and reporting of security events to demonstrate adherence to regulatory requirements effectively. Additionally, the integration of QRadar with governance, risk, and compliance (GRC) platforms will enable organizations to align their security efforts with broader risk management objectives and ensure a holistic approach to compliance. The future scope for mastering QRadar deployment revolves around embracing automation, integrating with emerging technologies, enhancing collaboration among security teams, adopting a proactive security posture, and streamlining compliance management processes.

## **REFERENCES**

1. I would like to express my sincere appreciation and cooperation with **Sri. V. Vijaya Rama Raju**, Associate professor in computer science, Sri Balaji Degree College their invaluable guidance and support throughout the duration of this cyber security project. As a mentor you play a crucial role in a project by providing guidance, advice, and support to the project team. They leverage their experience and expertise to help team members navigate challenges, make informed decisions, and achieve project goals. As a mentor, he also serves as a role model, offering encouragement and motivation to team members and helping them develop their skills and capabilities. Overall, a mentor's involvement can greatly enhance the success and growth of a project and its participants. Their expertise and insights have been instrumental in shaping the success of this endeavor. "Thank you for your dedication and mentorship"
2. <https://www.mimecast.com>
3. <https://www.ibm.com/docs/en/qsip/7.4?topic=deployment-qradar-overview>
4. <https://medium.com/@moamjad/qradar-part-6-7222499b2b75>