健康資訊交換系統中之容器安全 The Container Security in Healthcare Data Exchange System

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Abstract

This research proposes a mechanism to enforce the system call a specific policy in the container, which is deployed in runtime. This policy is designed for the FHIR healthcare data exchange standard's container, which could guarantee the FHIR server does not have unsupported behavior and takes almost zero overhead. Recently, many companies use containers to run their microservices since containers could make their hardware resources be used efficiently. And the newest healthcare data exchange standard FHIR (Fast Healthcare Interoperability Resources) [1] has been implemented in a container by IBM, Microsoft, and firebase. The deployment of FHIR in a container is a trend in the digital world [2] . However, containers are not sandboxes [3] . Containers are just isolated processes. Therefore, if hackers or malicious software could sneak into the container that would be a new cyber attacking surface in nearly future.

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- **1.2 FHIR**
- 1.2.1 RESTful API and Data Structure
- 1.2.2 Why IBM FHIR server
- 1.3 Data and Privacy

Related Works

- 2.1 Collecting System Calls
- 2.2 Find-granted Permission Control
- 2.3 Recently Exploited Vulnerabilities
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- **2.4** Virtual Environment Performance Benchmark

Preliminary

- 3.1 Container's Components
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- 3.2 Programs in Execution
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Proposed scheme

- 4.1 Workflow
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Analysis

- **5.1** Attacking Surface
- **5.2** Time Consuming
- 5.3 Statistics

Benchmark

- 6.1 Latency
- 6.2 Thruputs

Conclusion

- 7.1 Better Architecture
- 7.2 Future Machine Learning in Kernel

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