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

國立中山大學資訊工程學系 Department of Computer Science and Engineering National Sun-Yet-San University, Taiwan 110 學年度大學部專題製作競賽 Bencher degree's graduation project in 2021

Member: Chih-Hsuan Yang (B073070047) Advisor: Chun-I Fan

October 10, 2021

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.

Contents

Abstract		1
1	Introduction	3
2	Related Works	4
3	Preliminary	5
4	Proposed scheme	6
5	Analysis	7
6	Benchmark	8
7	Conclusion	9
Bibliography		10

Introduction

Related Works

Preliminary

Proposed scheme

Analysis

Benchmark

Conclusion

Bibliography

- [1] HL7. FHIR homepage. URL: https://www.hl7.org/fhir/.
- [2] A. Ahmed and G. Pierre. "Docker Container Deployment in Fog Computing Infrastructures". In: 2018 IEEE International Conference on Edge Computing (EDGE). 2018, pp. 1–8. DOI: 10.1109/EDGE.2018.00008.
- [3] Ian Goldberg et al. "A Secure Environment for Untrusted Helper Applications Confining the Wily Hacker". In: *Proceedings of the 6th Conference on USENIX Security Symposium, Focusing on Applications of Cryptography Volume 6.* SSYM'96. San Jose, California: USENIX Association, 1996, p. 1.