

## **Vulnerability Comparison Report**

A comprehensive analysis comparing vulnerabilities in your container images versus Chainguard's hardened alternatives.

## **Executive Summary**

## Security Vulnerability Assessment for Sample-Customer

This comprehensive vulnerability assessment demonstrates the challenges that Sample-Customer face in managing CVE's at scale. Sample-Customer is not alone in this challenge as many in the industry are grappling with CVE spawl & controls around OSS. This report shows the significant security advantages of migrating from standard container images to **Chainguard's hardened alternatives**. Analysis of 3 container image pairs reveals a **99.7**% **overall CVE reduction**, eliminating 1056 vulnerabilities across your infrastructure.

### **Key Findings**

- Significant Vulnerability Reduction: 3 of 3 images show measurable improvement with Chainguard alternatives
- Average Per-Image Improvement: 98.4% average CVE reduction per improved image
- Total Impact: 1059 vulnerabilities in current images reduced to 3 with Chainguard
- Reduced Attack Surface: Distroless and minimal base images eliminate unnecessary components
- Faster Remediation: Streamlined images enable quicker security updates and patches

### **Business Impact**

Overall Business Value A direct cost savings can be calculated as follows. 1-4hrs to resolve a CVE when you consider the research, business process/approvals and actual engineering effort. The equates to a cost of over \$2.7m based on average wage/engineering effort metrics.

- Enhanced Security Posture: 99.7% reduction translates to significantly lower risk of a breach
- Compliance Readiness: Fewer vulnerabilities mean easier security compliance achievement
- Operational Efficiency: 1056 fewer CVEs to track, patch, and manage
- Developer Productivity: Less time addressing security issues, more time on shipping value to the business

#### Recommendation

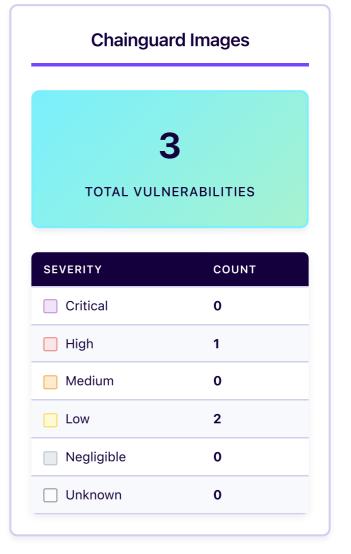
With demonstrated **99.7% CVE reduction** across 3 analyzed images, we strongly recommend transitioning to Chainguard images as part of your DevSecOps strategy to mature security practices and reduce operational toil across platform, security, and development teams.

99.7%

**CVE REDUCTION** 

1056 fewer vulnerabilities with Chainguard images





# **Images Scanned**

YOUR IMAGE	TOTAL VULNERABILITIES	CHAINGUARD IMAGE	TOTAL VULNERABILITIES
nginx:latest	146	cgr.dev/chainguard/nginx:latest	0
alpine/java:21	43	cgr.dev/chainguard/jd k:openjdk-21	2
python:latest	870	cgr.dev/chainguard/py thon:latest	1

• Images marked with an asterisk were retried with the :latest tag after initial scan failure.

## **Appendix**

## Sample-Customer Specific Logic/Assumptions

- Sample-Customer provided 3 images
- If the upstream software was EOL we mapped to :latest in Chainguard image
- Grype is leveraged as the scanner tool to scan both the Sample-Customer provided image as well as the Chainguard image
- If a scan with grype failed on any image, it attempted a tag for re-scanning which is represented with a \*
- If the above logic fails, the entire row will fail and is not included in the report. This is to ensure 1:1 comparison. Eg: some Customer images are behind a paywall or simply not available in the public registry
- CVE cost figure based on: Average 1hr to resolve a single CVE (including business process). An engineer wage of \$75 per hour multiplied by # of CVE's

## Methodology

This report was generated using the following methodology:

- Scanning Tool: Grype vulnerability scanner
- Data Sources: National Vulnerability Database (NVD) and other security databases
- Image Analysis: Container images were scanned for known vulnerabilities
- Comparison: Customer images compared against Chainguard hardened alternatives

## **Appendix (continued)**

## **Severity Levels**

Vulnerabilities are classified using the following severity levels:

- Critical: Vulnerabilities with CVSS scores of 9.0-10.0
- High: Vulnerabilities with CVSS scores of 7.0-8.9
- Medium: Vulnerabilities with CVSS scores of 4.0-6.9
- Low: Vulnerabilities with CVSS scores of 0.1-3.9
- Negligible: Vulnerabilities with minimal impact
- Unknown: Vulnerabilities without assigned severity scores

## **About Chainguard Images**

Chainguard Images are container images built with security-first principles:

- Minimal Base: Built on minimal base images to reduce attack surface
- Distroless: Contains only application dependencies, no package managers
- Regular Updates: Continuously updated with latest security patches
- Zero CVEs: Many images maintain zero known vulnerabilities
- SBOM Included: Software Bill of Materials for transparency
- Provenance Tracking: Complete software supply chain transparency with cryptographic attestations and verifiable build processes

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