



# Vulnerability Comparison Report

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

## Executive Summary

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### Security Vulnerability Assessment for Sample-Customer

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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

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- **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

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**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

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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

Your Images

1059

TOTAL VULNERABILITIES

SEVERITY	COUNT
<div>Critical</div>	15
<div>High</div>	96
<div>Medium</div>	161
<div>Low</div>	93
<div>Negligible</div>	694
<div>Unknown</div>	0

Chainguard Images

3

TOTAL VULNERABILITIES

SEVERITY	COUNT
<div>Critical</div>	0
<div>High</div>	1
<div>Medium</div>	0
<div>Low</div>	2
<div>Negligible</div>	0
<div>Unknown</div>	0

# 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/jdk:openjdk-21	2
python:latest	870	cgr.dev/chainguard/python:latest	1



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

# Appendix

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## Sample-Customer Specific Logic/Assumptions

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- Sample-Customer provided **3 images**
- If the upstream software was EOL we mapped to :latest in Chainguard image
- Gype is leveraged as the scanner tool to scan both the Sample-Customer provided image as well as the Chainguard image
- If a scan with gype 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

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This report was generated using the following methodology:

- **Scanning Tool:** Gype 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)

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### Severity Levels

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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

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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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