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Quality and Assurance Pipeline

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Who gives a damn!

Headline

XZ Utils Backdoor- CVE-2024-3094 “An example of how trust gets abused in open-source”

“Evolving from thinking of cybersecurity as a necessary evil to a **strategic advantage** sets you apart.”

ONAP LF-IT CI/CD

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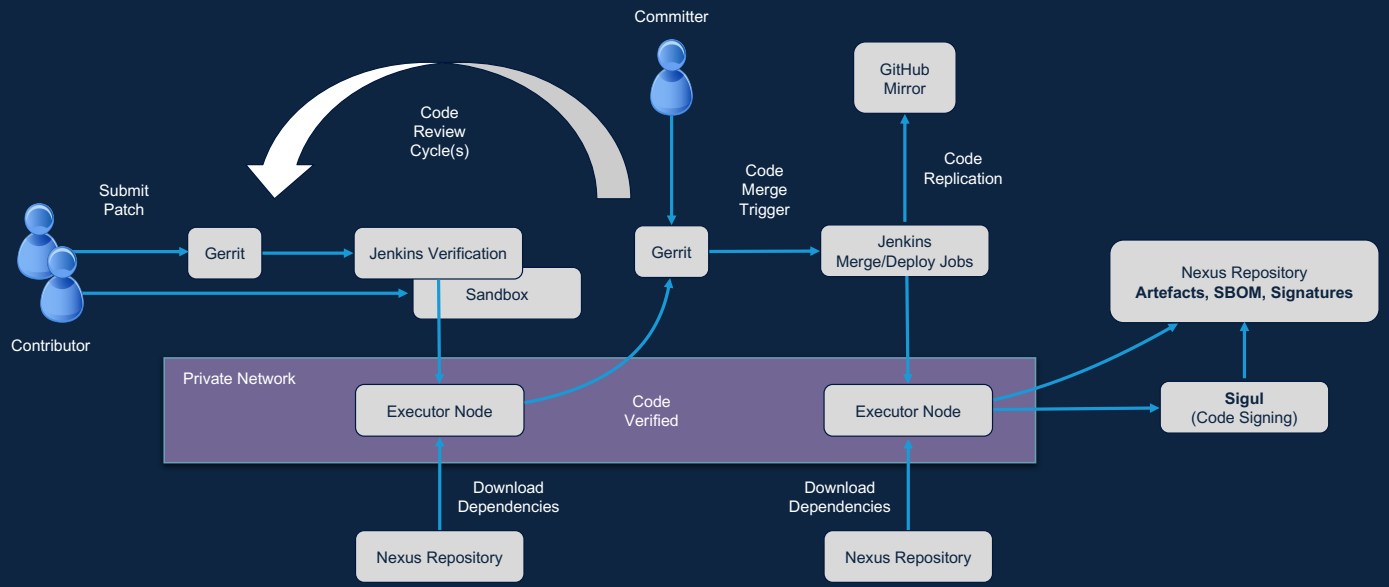
- LF-IT/ONAP CI/CD is a development approach
- Emphasizes automation and frequent code changes.
- It involves a seamless pipeline from code integration to deployment, promoting agility and efficiency in software development.

CI/CD Workflow Diagram



CI Security

- Access roles (contributor, Committer, Tester)
- User management (credentials, permissions- Least privileged, MFA)
- Detective controls
- Infrastructure controls
- Hardening build servers/nodes

Contributor/Contribution Management

- Artifact validation
- Static code analysis
- Integrate security testing directly into your pipelines
- Example: Docker containers, scan them with tools such as Inspector or Twistlock,
- If your tool has an API, you can use GitHub action to trigger it in CodePipeline
- If any security test fails, the Pipeline stops, and the code does not move to production

Governance

- Structure, roles and rituals.
- create vulnerability reports to accompany each release: list vulnerabilities in project created code and known CVEs in 3rd party packages
- create Jira ticket per code vulnerability and package vulnerability
- static application security testing (SAST) and software composition analysis (SCA) – **code coverage**
- Security and Architectural reviews for features and changes
- Manage technical Debt by assigning minimum fixed story points for debt retirement

Integration of Quality Assurance- Automated Testing

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Automated Code Review: sonarcloud.io

SonarCloud: https://sonarcloud.io/organizations/onap/projects
SAAS (Cloud hosted service)

Features

- Code auditing/review tool
- CI/CD integrated (automatic analysis of new code drops)
- Coverage reports
- Dependencies (e.g. Python modules and Java packages with known issues)
- Static/dynamic code analysis

Code Coverage

...l Review: Gerrit

...errit: https://gerrit.onap.org/

Features

- +2 and merge rights restricted and controlled by INFO.yaml
- Oversight of permissions managed by the project TSC meetings
- Approvals required for new top-level repository creation

Automated Security Scanning

- Security is integrated into the development process through automated security scanning. Static Application Security Testing (SAST) and
- Dynamic Application Security Testing (DAST) tools such as SonarQube and OWASP ZAP help identify and remediate vulnerabilities early in the development lifecycle. (Wish list)
- Dependency Management- for code reuse

Code Quality Metrics: Code Review and Static Analysis

- Regular code reviews and static analysis
- Tools like SonarQube helps maintain a high standard of code.
- Developers receive constructive feedback, promoting the creation of robust and maintainable software.

Traceability: Track code in CI/CD Pipeline

- CI/CD tools like Jenkins and GitHub enable visibility into the status of each code change,
- Facilitating effective collaboration and issue resolution.
- Use of Dashboards and Reports to assist quick review

Compliance and Auditing: Automated Compliance Checks

- Automated compliance checks with tools like InSpec help ensure that applications adhere to industry standards and regulatory requirements. This proactive approach mitigates the risk of non-compliance issues.
- Compliance may come from regional regulations or industry standards.
- MITRE Security Automation Framework (SAF) has published profiles for CIS Benchmarks several other best practices. Similarly commercial tools also offer profiles for specific industry.
- CNTI/Anuket etc..

Continuous Improvement: Regular Retrospectives and Feedback Loops

- Regular retrospectives and feedback loops are essential for continuous improvement. Learning from incidents and actively seeking feedback helps teams enhance their processes and adapt to evolving requirements.
- Improve community engagement to get feedback from End Users.

Secure Delivery

- Signed software and SBOMs/SW
- Documentation
  - User manuals/How To, Default/ranges in configs
- Release notes
  - Fixed, Outstanding
- Bug report (defects fixed and outstanding)
  - How to file a field found bug/feature request

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