Trustworthiness Assessment of the BlackArch Linux Project

1. Executive Summary

This report provides an in-depth analysis of the trustworthiness of the BlackArch Linux project, a penetration testing distribution based on Arch Linux. The assessment encompasses a detailed examination of the project's developers, their contributions to the cybersecurity community, the distribution's security history, community sentiment, and the integrity of its GPG key infrastructure. Findings indicate a mixed landscape of trust factors. The project benefits from the involvement of experienced security professionals who actively contribute to the cybersecurity community and develop relevant tools.[1] However, recurring issues with package signing, a past malware incident on the project website, criticisms regarding the installation method, and the absence of independent security audits raise concerns about the overall trustworthiness of the distribution for all users. While BlackArch offers a vast repository of up-to-date security tools, potential users, especially those new to penetration testing or Linux, should carefully consider these factors and adopt a cautious approach to its deployment and use.

2. Individual Developer Analysis: Online Presence and Contributions

The BlackArch project lists a team of developers and contributors who play various roles in the creation and maintenance of the distribution.[4] Understanding the background and activities of these individuals is crucial for assessing the project's trustworthiness.

Levon Kayan, identified as 'noptrix' and holding the role of Lead Developer, appears to be a central figure in the BlackArch project.[4] A GitHub profile associated with his name, 'levontikoyan (Levon Tikoyan)', showcases some basic JavaScript projects.[8] This suggests coding activity, although the projects are not explicitly security-focused. Notably, numerous reports across different online platforms, spanning from 2017 to 2023, detail persistent issues with the validity and trust of packages signed by Levon 'noptrix' Kayan.[9] Users have frequently encountered "invalid signature" or "unknown trust" errors during system updates, indicating a long-standing problem with the project's package signing and key management processes. This recurring challenge may lead users to experience difficulties in securely updating their systems, potentially resulting in outdated software or the adoption of insecure workarounds.

Alia Morozova, known as 'anunna' and listed as a Developer (and informally as 'Queen'), demonstrates significant and diverse contributions to the BlackArch

project.[4] Her GitHub profile, 'anunna (Alia Morozova)', confirms her active involvement in the official BlackArch organization and highlights her contributions to the core distribution, ISO creation, and website development.[18] She is also a contributor to the blackarch-config-xfce and blackarch-config-calamares repositories, indicating her work on the distribution's configuration and installer.[20] Furthermore, Alia Morozova actively engages with the BlackArch community on Reddit as user 'a-nun-na', offering technical advice, support, and sharing project-related announcements.[22] This level of community interaction suggests a commitment to user support and transparency. However, a Reddit post [24] raises a concern regarding Alia Morozova's LinkedIn profile, which allegedly links her to work for an entity associated with the Russian government. This has led to public discussions about potential conflicts of interest and the project's neutrality, which users may consider when evaluating the trustworthiness of the distribution.

Pedro Freitas, identified as 'psf' and a Developer, is another active member of the BlackArch team.[4] His GitHub profile, 'PedroSFreitas (Pedro F.)', shows direct contributions to the main BlackArch repository and related projects like blackarch-slim-iso and blackarch-docker.[25] His personal website, pedrosfreitas.github.io/, identifies him as a "Red Team Operator, Penetration Tester, BlackArch Developer" and features a blog focused on penetration testing and security consulting.[1] This public profile aligns with the project's goals and enhances his credibility within the security community. Notably, he uses a different email address (pedrosffreitas@protonmail.com) on his personal website compared to the one listed for BlackArch (psf@blackarch.org). His contributions to BlackArch include changes to package build files (e.g., dislocker) and bug fixes related to the i3 window manager.[27]

Pierre B., with the nickname 'Pi3rrot' and the role of Developer and Torrent Master, has made significant contributions to the accessibility and infrastructure of BlackArch.[4] He created and maintains the 'blackarch-install-scripts' repository on GitHub, which provides various methods for installing the distribution.[29] Additionally, he hosts a mirror for BlackArch downloads at http://blackarch.pi3rrot.net/blackarch/.[30] This mirror has also served as a temporary website for the project during outages.[33] His role as Torrent Master suggests responsibility for ensuring the legitimate distribution of BlackArch ISO images through torrents.

Sachin S. Kamath, known as 'pwnfoo' and a Developer, has a notable presence in the security community.[4] His GitHub profile, 'pwnfoo (Sachin Kamath)', shows contributions to the main BlackArch repository and the development of his own security tool, 'NTLMRecon', used for enumerating NTLM authentication endpoints.[2] He also has a profile on Android Arsenal, listing his affiliation with BlackArch and crediting

him for the 'APKTool' Android decompiler.[38] His involvement extends to contributing to the 'ShieldOS' project on GitHub.[40] His activity and tool development demonstrate his expertise and commitment to the cybersecurity field.

Christopher Downs, identified as 'dualfade' and a Developer, maintains a GitHub profile under the same nickname, linking to his website vadersecurity.com and explicitly stating his affiliation with BlackArch.[4] His GitHub activity reveals the development of several Python scripts focused on security tasks, including tools for reverse shells, GraphQL attacks, and JWT vulnerabilities. He is also the developer of 'honeycreds' and 'spdb2jsluice', which are included in the BlackArch defensive and forensic tool categories, respectively.[42] His involvement in BlackArch also extends to being listed as a contact for project donations.[44]

Stefan Venz, known as 'ikstream' and a Developer, has an active GitHub profile under the name 'ikstream (Stefan Vranješ)', which links to BlackArch.[4] His contributions include work on the main BlackArch repository and other security-related projects. He also engages with the BlackArch community on Reddit, providing updates and support as user 'ikstream'.[46] Furthermore, he is responsible for maintaining the list of BlackArch mirror sites.[48] The discrepancy in his last name (Vranješ on GitHub vs. Venz in the developer list) requires noting.

Leon L. (Tazmain), a listed Developer, contributed the first draft to the 'BlackarchKdeMenu' tool on GitHub.[4] While the research material contains numerous references to individuals and entities related to Tasmania with similar names, these do not appear to be directly connected to his BlackArch involvement.

Alexandre Zanni, known as 'noraj' and a Developer, has an extensive and well-documented presence in the cybersecurity community.[3] His GitHub, GitLab, HackerOne, and Exploit-DB profiles showcase his expertise as a cybersecurity engineer, security auditor, pentester, and ethical hacker.[3] He has developed security tools like 'haiti' and maintains the flask-session-cookie-manager package in BlackArch.[53] His blog on raw.pm features security-related content and write-ups.[56] He is also involved in project policies, such as discussing licensing for BlackArch packages.[57]

Semtex, with the nickname 's7x' and the role of Developer, maintains a GitHub profile under the same nickname.[4] His contributions to BlackArch include involvement in the project's automated package management processes through GitHub Actions and opening an issue on the Blackman repository related to compression algorithms.[59]

Erik, known as 'deep_m4gic' and listed as a Designer, is also credited as a contributor to the BlackArch guide, and his email is associated with a forensic tool.[4] However, his GitHub profile Erikdeep-m4gic is inaccessible [62], limiting further analysis of his contributions.

Alexander Rothenberg, with the nickname 'EisWiesel' and the role of WebDesigner, is responsible for the project's website.[4] His GitHub profile shows some software development projects, but none are explicitly identified as contributions to BlackArch.[63]

3. Developer Involvement in the Broader Security Community

Several BlackArch developers actively participate in the broader security community beyond their direct contributions to the project. Pedro Freitas maintains a blog and identifies as a penetration tester and red team operator.[1] Sachin S. Kamath has developed and released security tools like NTLMRecon and APKTool, and has been involved in other open-source projects like ShieldOS.[34] Christopher Downs has created and shared various security-focused Python scripts and developed tools included in BlackArch, such as honeycreds.[41] Stefan Venz contributes to other open-source projects and engages with the community on Reddit.[45] Alexandre Zanni has an extensive presence as a security researcher, pentester, and tool developer, with contributions to numerous projects and vulnerability disclosures.[3] Semtex is involved in package management and has contributed to the Blackman tool.[60] This level of external involvement suggests a team with practical experience and a commitment to the cybersecurity field.

4. BlackArch Linux: Security Vulnerabilities and Incident History

The security history of the BlackArch project reveals some incidents and concerns. In 2021, the official website, blackarch.org, was flagged for malware detections by Quttera.[64] This incident raises questions about the security practices surrounding the project's online infrastructure and the potential risk to users visiting the site or downloading files.

A recurring issue that could be considered a security concern is the persistent problem with GPG signatures for BlackArch packages.[9] These errors disrupt the secure update process, potentially leading users to bypass signature verification in order to update their systems. This could expose them to the risk of installing tampered or malicious packages, weakening the overall security of the distribution.

Concerns have also been raised within the community regarding Alia Morozova's

professional affiliations, as highlighted in a Reddit thread.[24] Her alleged connection to an entity associated with the Russian government has led to discussions about potential conflicts of interest and the project's neutrality, which some users may perceive as having security implications.

Furthermore, the installation method recommended by BlackArch, which involves running an external script as root without prior verification, has been criticized by members of the Arch Linux community as a significant security risk.[67] This practice suggests a potential lack of security focus in the initial setup of the distribution.

5. Community Perspectives on BlackArch Trustworthiness

Community discussions about the trustworthiness of BlackArch Linux present a range of opinions. On the Arch Linux forum, some members have expressed strong negative views regarding BlackArch's security practices, particularly the installation method, with one user labeling it as being for "script kiddies".[67]

The 0x00sec forum contains a discussion with mixed perspectives, where some users find BlackArch up-to-date and useful, while others criticize the large number of pre-installed tools and suggest alternatives.[68] A BlackArch developer participated in this discussion, attempting to address some of the criticisms.

On Reddit's r/cybersecurity, experienced penetration testers have suggested that building a custom distribution is often preferred over using pre-built options like Kali or BlackArch, citing potential unreliability and bloat.[69] However, the ease of adding the BlackArch repository to a standard Arch Linux installation is also noted.[69]

DistroWatch features user reviews with an average rating of 9.2/10, with users praising the extensive tool collection and rolling release nature, but also mentioning potential configuration difficulties for less experienced users.[70]

A Reddit thread comparing Arch and Black Arch emphasizes that BlackArch is essentially Arch with an added repository of security tools, implying that its trustworthiness is closely related to that of Arch Linux itself.[71]

YouTube reviews offer varied perspectives, with some highlighting the comprehensive toolset and lightweight nature, while others point out the complexity for beginners and the potential for an overwhelming number of tools.[72]

6. Security Audits and Reviews of BlackArch Linux

The research material does not provide any evidence of publicly available,

independent security audits conducted on the core BlackArch Linux distribution. While Ntegral offers a certified version of BlackArch Essentials, this is a commercial product and not an independent audit of the main project.[77] The absence of such audits means that the assessment of BlackArch's security relies on the community's scrutiny and the development team's self-assessment and practices.

7. Impact of Developer Roles on Project Security

The security of BlackArch Linux is influenced by the roles and responsibilities of its developers. Levon Kayan, as the Lead Developer, bears overall responsibility for the project's direction and security practices. The recurring package signature issues under his leadership raise questions about the effectiveness of these practices. The Developers contribute to various aspects of the distribution, and their individual expertise in security likely impacts the overall security posture. Pierre B., as Torrent Master, has a specific responsibility for the secure distribution of ISO images. The WebDesigner, Alexander Rothenberg, is responsible for the security of the project's online presence, as highlighted by the past malware incident on the website. The Designer, Erik, while primarily focused on visual aspects, could indirectly impact security through the user interface. The varying levels of security focus and experience among the team members may lead to inconsistencies in security practices across different areas of the project.

8. GPG Key Infrastructure and Verification

BlackArch Linux utilizes GPG keys for signing packages, which is a fundamental security mechanism for verifying the integrity and authenticity of software updates.[79] The BlackArch website lists the GPG key IDs for each developer [4], and the blackarch.gpg keyring file is available on GitHub.[79] However, the persistent "invalid signature" errors, particularly those associated with Levon Kayan's key, indicate potential weaknesses in the project's key management infrastructure.[9] These issues suggest problems with key validity, trust establishment, or distribution. The BlackArch FAQ provides troubleshooting steps for these errors, and the Arch Linux Wiki offers general guidance on pacman and keyring management, which are relevant given BlackArch's base.[80] The frequency of user reports regarding GPG signature problems across various community platforms [65] underscores the ongoing challenge for the project in ensuring a reliable and secure update process.

9. Overall Trustworthiness Assessment of BlackArch Linux

Assessing the overall trustworthiness of BlackArch Linux reveals a complex picture.

The project benefits from a team that includes experienced cybersecurity professionals with a demonstrable commitment to the field and contributions to the open-source community. The rolling release model ensures that the distribution offers access to a vast and up-to-date collection of security tools, which is a significant advantage for penetration testers and security researchers.

However, several factors raise concerns about its trustworthiness. The recurring issues with GPG package signatures, particularly those associated with the Lead Developer, indicate potential weaknesses in the project's security practices for software distribution and updates. The past malware incident on the official website, even if resolved, highlights vulnerabilities in the project's online infrastructure. Criticisms from within the Arch Linux community regarding the recommended installation method suggest a potential lack of security awareness in this crucial aspect of user onboarding. The absence of publicly documented independent security audits further contributes to the uncertainty surrounding the distribution's overall security posture. While community feedback on platforms like DistroWatch is generally positive, discussions on forums like Arch Linux and Reddit reveal mixed opinions, with some experienced users expressing reservations about its reliability and suitability for professional use.

10. Recommendations for Users Considering BlackArch

Users considering BlackArch Linux should approach its adoption with caution and a clear understanding of its strengths and weaknesses. Given the recurring GPG signature issues, it is crucial to verify the checksum of downloaded ISO images.[81] Users should also exercise caution during system updates and be prepared to troubleshoot potential signature errors, possibly by referring to the BlackArch FAQ or the Arch Linux Wiki.[80]

For users new to penetration testing or Linux, BlackArch's complexity and the potential for encountering technical issues might make it a less suitable starting point. Distributions with more user-friendly interfaces and stronger community support for beginners might be preferable. Experienced security professionals who require a comprehensive toolset and are comfortable with troubleshooting might find BlackArch valuable, but they should remain vigilant regarding the security concerns identified in this report.

Consideration should also be given to the specific needs and risk tolerance of the user. For highly sensitive environments or professional engagements requiring a high degree of assurance, the lack of independent security audits on BlackArch might be a

significant drawback. In such cases, building a custom environment on top of a more general-purpose distribution like Arch Linux, with carefully selected and verified security tools, could be a more trustworthy approach.

Conclusions

BlackArch Linux offers a powerful and extensive collection of security tools, making it a potentially valuable resource for penetration testers and security researchers. The involvement of experienced developers like Alexandre Zanni and Sachin Kamath, who are active in the broader security community, adds to its credibility. However, the persistent issues with package signing, the past malware incident on the website, criticisms of the installation method, and the lack of independent security audits raise valid concerns about its overall trustworthiness. Users should carefully weigh these factors against their specific needs and technical expertise before relying on BlackArch for critical security tasks. A cautious and informed approach, with a focus on verifying the distribution's integrity and staying aware of potential security concerns, is recommended for those who choose to use BlackArch Linux.

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