

PROJECT CHARTER

SUPER

NANNY



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1. OVERVIEW OF THE PROJECT

Category	Details
Project Title	SuperNanny
Project Sponsor	ISEN Méditerranée
Date Prepared	09/11/2024
Project Manager	VERNANCHET Louis
Project Customer	ISEN Méditerranée, Linux users

PURPOSE AND JUSTIFICATION

Cybersecurity is a critical concern, especially for Linux users, where malware attacks can compromise data confidentiality and integrity. SuperNanny aims to develop an advanced security module for the Linux kernel to monitor, intercept, and control application executions.

The goal is to provide an additional layer of security by restricting applications' access to critical resources based on predefined permissions.

PROJECT DESCRIPTION

SuperNanny is a Linux kernel module designed to intercept and regulate application executions according to permissions stored in a database. It uses Landlock as a mechanism to enforce real-time access controls, alerting the user when an application attempts to access critical resources.

USE CASE

SuperNanny is intended for system administrators and end users to :

1. Intercept application executions on Linux distributions.
2. Enforce security rules stored in a database.
3. Prompt alerts when critical resource access is attempted, allowing the user to accept or deny the action.

2. SPECIFIC REQUIREMENTS TO SATISFY

HIGH-LEVEL REQUIREMENTS

According to the requirements, the main requirements are :

1. Scalable deployment via Kubernetes to allow usage on multiple machines.
2. Development in Rust to ensure performance and memory safety.
3. Use of Landlock to control file and network access.
4. User interface for managing permissions and displaying alerts when critical access is attempted.
5. Permission database to store application access rights.

CONSTRAINTS

The project constraints include:

1. Compatibility with Linux : SuperNanny must be compatible with Ubuntu and Kali distributions.
2. Kernel module performance : The module must operate with minimal impact on system performance.
3. Scalability : SuperNanny should be deployable and manageable on Kubernetes for multi-machine environments.
4. Strict permission controls : Landlock should ensure that only authorized actions are performed, even in the event of potential vulnerabilities in SuperNanny.

3. RISK MATRIX (TOP 5 RISKS)

THE 5 HIGH-LEVEL RISKS (PERFORM THE RISK MATRIX TO IDENTIFY THE 5 HIGHEST RISKS) :

From the given Risk Matrix, here are the 5 High-Level Risks with the highest combination of Probability and Impact, identified based on the "Critical-Critical" or other high-priority intersections:

Risk	Probability	Impact	Mitigation Strategy
Sandbox escape	4 (Critical)	4 (Critical)	<ul style="list-style-type: none">Strengthen sandboxing mechanisms.Conduct thorough security validation and testing.
Load management on Kubernetes (scalability issues)	4 (Critical)	3 (High)	<ul style="list-style-type: none">Perform regular load and scalability tests.Optimize Kubernetes resource usage configurations.
SuperNanny not usable on new Linux updates	4 (Critical)	2 (Medium)	<ul style="list-style-type: none">Conduct compatibility testing on Linux updates.Implement backward compatibility mechanisms.

Risk	Probability	Impact	Mitigation Strategy
Delay in development	3 (High)	4 (Critical)	<ul style="list-style-type: none"> Add time buffers to the schedule. Regularly track progress and implement agile iterations.
Error in the kernel module code	2 (Medium)	4 (Critical)	<ul style="list-style-type: none"> Conduct rigorous unit testing and peer code reviews. Utilize debugging tools to identify and resolve errors early.

4. ACCEPTANCE/ VALIDATION CRITERIA

Project Objectives	Success Criteria	Person Approving
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SCOPE

<ul style="list-style-type: none"> Developing the kernel module in Rust. Integrating Landlock to control access. Creating a database to store access rules. Building a user and admin interface. Deploying via Kubernetes. 	<ul style="list-style-type: none"> The kernel module must be successfully developed in Rust. Landlock must be fully integrated to provide access control. A permissions database must be implemented to manage access rules. A user and admin interface must be built to manage permissions. SuperNanny must be deployed via Kubernetes for scalability. 	<p>VERNANCHET Louis, Project Manager, approves the project scope, ensuring all objectives are aligned with the project's needs.</p>
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Project Objectives

Success Criteria

Person Approving

TIME

- The project spans one year, with key phases :
- Kernel Module Development : Q1 2024
- Landlock Integration and Permission Management : Q2 2024
- Kubernetes Deployment and Scalability Testing: Q3 2024
- Finalization and User Documentation : Q4 2024

- Each phase should be completed within the designated quarters:
- Kernel Module Development by Q1 2024
- Landlock Integration and Permission Management by Q2 2024
- Kubernetes Deployment and Scalability Testing by Q3 2024
- Finalization and User Documentation by Q4 2024

Each member must approve the timeline of their tasks

COST

Since ISEN Méditerranée is providing us with a server, the project incurs no additional costs. All necessary infrastructure for SuperNanny is already in place, ensuring a zero-budget implementation.

The project must remain within the zero-budget constraint, utilizing only open-source tools and resources provided by ISEN Méditerranée.

ISEN Méditerranée approves the zero-budget requirement, ensuring the project will use only open-source tools and available resources.

5. DELIVERABLES/ KEY MILESTONES

Summary Milestones (must appear on your planning too)	Due Date (not confirmed)
Technical project launch	18/09/2024 = Deadline_1
Cybersecurity project launch	19/09/2024= Deadline_2
Mid-term project progress S7	20/12/2024= Deadline_3
S7 Deliverables	06/02/2025= Deadline_4
S7 Jury	07/02/2025 = Deadline_5
Mid-term project progress S8	03/04/2025= Deadline_6
S8 Deliverables	01/06/2025= Deadline_7
Jury S8	03/06/2025= Deadline_8
COWORK Presentation	03/06/2025= Deadline_9

6. TEAM ORGANIZATION

Name	Position	Role/Responsibilities	Contact Information
VERNANCHET Louis	Project & Team Manager & Tester	SCRUM Master, oversight of project tasks and deliverables & Handle Kubernetes deployment and scalability tests	louis.vernanchet@isen.yncrea.fr
CATALA Alexandre	Developer	Develop and test the kernel module and system functionality	alexandre.catala@isen.yncrea.fr
Lorenzo MATILLA-NORO	Developer	Design and implement rule management and database integration	lorenzo.matilla@isen.yncrea.fr
Tanguy CAILLEAUX	Developer	Develop the web interface for user interaction	tanguy.cailleaux@isen.yncrea.fr

7. STAKEHOLDER AND BUDGET OVERVIEW

ESTIMATED BUDGET

For our project, ISEN is providing us with a server, and we don't need any additional resources that would incur a cost. Therefore, the estimated budget is zero.

Stakeholder	Role
ISEN Méditerranée	Academic and financial support
Frederic PAILLART	Client
Linux users	Users

APPROVALS

Project Manager Signature

Sponsor or Originator Signature

Project Manager Name

Sponsor or Originator Name

Date

Date