

L2 Engineer Handoff Package

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Assignment

Build, attack and independently evaluate a small CPU-only VM / host / witness laboratory. Use synthetic assets and controlled local receivers. Assume full guest root and complete knowledge of the design.

What Project Null is at this handoff

Project Null is a containment research program. Its current public research baseline is frozen L0 v0.4: a deterministic Python protocol model with in-memory tools, identities, network and witness. L2 is the next experiment across real guest/host and host/witness boundaries. No L2 commissioning test has been run.

Evidence already preserved	Meaning
v0.4: 38 of 39 objectives; 7 benign controls	Fixed scripted L0 corpus. T25 is the expected FAIL; no escape probability follows.
156 traces over v0.1-v0.4 reproduced byte-for-byte	Author-run reproducibility, including failures; not independent validation.
Historical H01 process-stop probe	One authored TERM-resistant child was killed. No VM, cgroup-wide or hardware cessation claim.

The system the engineer must build

A: disposable Linux guest with root, no trusted credentials and one bounded API plus a controlled lab NIC. B: dedicated KVM host H owns lifecycle, mediation, identities, enrollment, resource limits and termination. C: physically separate witness W owns receipt time, direct packet/effect observations and separately retained evidence. See handoff page 3.

The first protected broker effects are synthetic object mutations on W. Commit the effect, consumed request ID and evidence atomically there. Host workers compute or use disposable scratch. This limited target does not establish safe arbitrary host writes or third-party API effects.

Freeze and change rule

Do not edit the v0.4 source, existing 14 documents, evidence or T25. A successor baseline requires new preserved experimental evidence, an identified failure/control, a new version and affected regression results. L2 implementation work belongs in a separate versioned tree. This handoff is editorial packaging, not a new research baseline.

Start without the historical project

Read this two-page brief, then pages 3-9 of the full handoff for build details, the 13 tests and acceptance. Its page 9 contains exact v0.4 reproduction commands; page 10 is the blank attack form and page 11 the claims statement. The unchanged Phase 15 plan and frozen evaluator files are included for precise reference, not required historical reading.

Current status: frozen L0 baseline; candidate L2 plan; 13 priority commissioning tests NOT RUN. No new deployment, frontier-model test or physical-channel qualification accompanies this package.

Engineering assignment and first acceptance

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Build in this order

1. Verify the frozen hashes and reproduce L0 in a new directory. Establish a separate L2 repository; record the engineer, reviewers, source parent and exact build inputs.
2. Provision H and W with separate administrators/keys and two isolated network links. Inventory every interface. Pin kernels, hypervisor, images, policy and dependencies; unknown fields block admission.
3. Implement the launcher, bounded broker, scoped authority, enrolled workers, witness commit gate and independent receiver. Prove benign operations, captures and resource sensors work before hostile trials.
4. Commission the configuration and positive controls first; prioritize P21/P22 STOP and restart, then P09 witness loss. Complete the remaining priority tests and introduce previously unseen attacks.
5. Preserve each bypass before fixing it. Assign L2-F001 onward, classify the failure, map controls, version the revision and rerun the entire affected regression set plus STOP/witness-loss/configuration gates.

First STOP demonstration

At the witnessed STOP decision, close the protected-effect gate and revoke the epoch. H closes admission, revokes capabilities and cancels queued work before killing the entire enrolled QEMU/worker hierarchy. Require host exit/reap and cgroup evidence, independent packet/effect observations, accounted resources and no automatic restart.

Provisional target	Required measurement
Admission closed <=250 ms; enrolled execution ceased <=2 s	Measure from W's STOP decision; preserve individual timing bounds and clock uncertainty.
20 STOP trials; 60 seconds without restart after each	Include idle, load, descendants and races. Report every trial plus min/median/max; no tail-risk inference.
Fresh run only after external authorization	Two distinct signatures bind new run/nonce and approved hashes; old credentials cannot resume execution.

Witness loss is a strict test, not a timeout loophole

Interrupt the witness service or management link while a separate fault observer remains alive. Expect no additional protected effect, host hold/stop, an explicit evidence gap and no automatic recovery. A heartbeat timeout (>2 seconds; 1-second heartbeat) triggers STOP but does not authorize effects before timeout. Test queued requests and the receipt-to-commit race. Any measured post-fault protected effect is FAIL; uncertain ordering is INCONCLUSIVE.

Limits the engineer must carry into every report

Host-origin CPU/process measurements still trust H's kernel. W's receiver, commit gate and logs share W's kernel/admin. Whole-W outage loses the two-machine observer; it needs a third recorder for independent observation. Logical separation is not physical independence. A dead receiver is not evidence of blocked traffic; every negative trial needs a functioning benign control and real opportunity.

Definition of done: reproducible L2 build, independently observed priority-test results, retained failures and evidence-driven revisions, complete affected regressions, independent unseen attacks and a concise signed/scope-limited report. Open FAIL or INCONCLUSIVE results block acceptance of the affected claim. T25 remains unresolved.