

ELLYPUNK

# Yuki Time

WEEKLY DIGEST

14-20 September 2026



# This week

14-20 September 2026

Available archived editions, in their original date order.

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YUKI TIME

# ONE READ, TWO QUEUES FOLLOW AN NVMe COMMAND

FROM HOST MEMORY TO SSD — AND BACK

HARDWARE & INFRASTRUCTURE  
INTERMEDIATE

## 1 THE WAITING READ

“ The data is on this SSD.  
Follow the command—not just the cable.

— YUKI

APP WAITS · DRIVER BUILDS READ · NVMe/PCIe PATH

## 2 SUBMIT IN HOST MEMORY

“ First, the host writes the command  
into its submission queue.

— YUKI

HOST DRAM · SQ ENTRY · READ + DATA BUFFER

DRIVER

SQ ENTRY

SQ TAIL

DOORBELL

THE DOORBELL ANNOUNCES NEW WORK · IT DOES NOT CARRY THE READ DATA

## 3 CONTROLLER CONSUMES + EXECUTES

“ The doorbell says work is waiting.  
The controller fetches and executes it.

— YUKI

CONTROLLER FETCHES COMMAND · READ DATA RETURNS TO THE HOST BUFFER

MEDIA

CONTROLLER

PCIe

HOST BUFFER

PRP OR SGL DESCRIBES THE HOST BUFFER · INTERNAL CACHE / FLASH WORK IS DEVICE-SPECIFIC

## 4 POST THE COMPLETION

“ Data moved. Now the completion reports  
status for the matching command.

— YUKI

CQ ENTRY · COMMAND ID · STATUS · OPTIONAL INTERRUPT

COMMAND ID

MATCH THE READ

STATUS

CHECK SUCCESS / ERROR

PHASE TAG

DETECT NEW ENTRY

HOST ADVANCES CQ HEAD + RINGS CQ DOORBELL · SLOT MAY BE REUSED

## 5 CLOSE THE LOOP

HOST

PLACE COMMAND → ADVANCE SQ TAIL → RING SQ DOORBELL

CONTROLLER

CONSUME COMMAND → TRANSFER DATA → POST COMPLETION

HOST

MATCH ID → CHECK STATUS → ADVANCE CQ HEAD → RING CQ DOORBELL

SQ HEAD MOVEMENT MEANS CONSUMED — NOT NECESSARILY EXECUTED OR COMPLETED

THIS PAGE IS NVMe OVER PCIe · QUEUE SETUP IS ALREADY COMPLETE

NVMe completes a read through two queues:  
submit the command, return the status.

PLACE · RING · EXECUTE · COMPLETE · RECLAIM

Sources: NVMe Base 2.4 · NVMe/PCIe 1.4 · NVM Command Set 1.3 · Linux kernel docs

YUKI TIME · 14 SEP 2026



YUKI TIME

# THE ERROR WAS CORRECTED

## WHY CARE?

HARDWARE & INFRASTRUCTURE

INTERMEDIATE

### 1 THE QUIET ALERT

“ The server stayed up.  
But one memory bit needed help.  
— YUKI

WORKLOAD CONTINUES · CORRECTED MEMORY EVENT RECORDED

### 2 READ · CHECK · CORRECT

“ ECC checks the stored codeword.  
A correctable pattern can be recovered.  
— YUKI

DATA + CHECK BITS → SYNDROME → CORRECTED DATA

READ

CHECK

RECOVER

THE CODE AND CORRECTION STRENGTH ARE PLATFORM-SPECIFIC.  
A CORRECTED EVENT DOES NOT MEAN EVERY ERROR IS CORRECTABLE.

### 3 THREE DIFFERENT STATES

Treat recovery, persistence and escalation as separate questions.

#### CORRECTED

DATA RECOVERED  
WORK MAY CONTINUE

#### REWRITTEN

SCRUB MAY WRITE BACK  
A CLEAN CODEWORD

#### UNCORRECTED

ECC COULD NOT RECOVER  
PLATFORM RESPONSE VARIES

CORRECTED IS NOT THE SAME AS HARMLESS · UNCORRECTED IS NOT ALWAYS FATAL

### 4 PATROL BEFORE DEMAND

“ A background scrub reads memory  
before the workload needs that address.  
— YUKI

READ LOCATION → CHECK ECC → CORRECT IF POSSIBLE → WRITE BACK

BACKGROUND / PATROL SCRUB: walks memory during normal operation  
ON-DEMAND SCRUB: targets a requested address range when supported

SCRUB CONTROLS, RATES AND REPORTING DEPEND ON PLATFORM, FIRMWARE, DEVICE AND OS SUPPORT

### 5 WATCH THE PATTERN

“ One correction is evidence.  
A rising cluster is a maintenance signal.  
— YUKI

CORRECTED EVENTS OVER TIME

RECORD LOCATION · TREND COUNTS · FOLLOW PLATFORM GUIDANCE · SCHEDULE SERVICE

ERROR-TO-DIMM MAPPING MAY BE INCOMPLETE OR PLATFORM-SPECIFIC

ECC can save the read.

Scrubbing helps repair the stored copy.

Monitoring tells you whether the hardware is getting worse.

CORRECT · SCRUB · TREND · ESCALATE

Sources: Linux kernel EDAC · Linux scrub control · Intel RAS





YUKI TIME

# NEW ADDRESS, OLD ANSWER

DNS CHANGES DO NOT RESET EVERY CACHE

HARDWARE & INFRASTRUCTURE · INTERMEDIATE · 16 SEP 2026

## 1 THE MOVE

“ The service moved. DNS was updated.  
Why do some clients still reach  
the old address?

— YUKI

DNS maps names to records.  
An A record holds an IPv4 address.

**AUTHORITATIVE SERVER**

Publishes the zone’s records.

**RECURSIVE RESOLVER**

Looks up answers and can cache them.



## 2 THE CLUE

“ The answer is cached.  
Its remaining TTL has  
not expired yet.

— YUKI

**TTL = TIME TO LIVE**

A cache lifetime, in seconds.  
Changing the source does not  
rewrite answers already cached.



## 3 ONE RESOLVER’S CACHE

ILLUSTRATION · NOT TO SCALE · TTL 300 s · NO PREFETCH OR SERVE-STALE

09:00

09:01

09:02

09:05

OLD answer cached  
300 s remaining

Source changes  
240 s remaining

OLD answer reused  
180 s remaining

Original TTL expires  
Next lookup refreshes\*

\*Assumes successful fresh resolution. Expiry is not an instant global update.

## 4 CHECK THE RIGHT LAYER

“ Compare the authoritative answer  
with the resolver your client uses.  
Then test the service by hostname.

— YUKI

**PLAN THE MOVE**

Lower TTL in advance. Allow the  
previous TTL to elapse before  
changing the record.  
Keep the old endpoint serving  
during the transition where practical.

SUCCESSFUL REFRESH → NEW ADDRESS RETURNED



Browser, OS and application caches also matter; existing connections do not move.  
Serve-stale resolvers may use expired data if refresh fails. TTL is not a global deadline.

**A DNS update changes the source—  
not every cached answer.**

Sources: IETF RFC 1034 · RFC 8767 · AWS Route 53 · Cloudflare DNS

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# YUKI TIME SAVED OR JUST OPEN?

RAM AND STORAGE HAVE DIFFERENT JOBS  
HARDWARE & INFRASTRUCTURE · BEGINNER · 17 SEP 2026

## 1 ON SCREEN IS NOT ENOUGH

“ I can see my latest changes.  
But are they saved—or only  
part of the current editing session?  
— YUKI

An open document uses working memory.  
The saved file is a separate stored copy.

RAM · WORKING SPACE  
Holds data the computer is using now.

STORAGE · KEEPING SPACE  
An SSD or hard drive holds saved files.



## 2 MEET THE TWO PARTS

“ Ordinary RAM needs power  
to keep its contents.  
Storage does not need constant power.  
— YUKI

### VOLATILE ≠ NON-VOLATILE

RAM loses its contents without power.  
Storage retains data already written.  
Neither part makes files indestructible.



## 3 FOLLOW A PRACTICE FILE

SIMPLIFIED LOCAL-FILE WORKFLOW · APP BEHAVIOUR VARIES

OPEN

Load saved contents  
Work in memory

EDIT

Change the document  
Not necessarily saved

SAVE

Write the latest changes  
Check save completed

REOPEN

Open the saved file  
Check the latest edit

Use a harmless practice file. Close normally—never pull the power to test this.

## 4 SAVE, THEN CHECK

“ I save the practice file, close it,  
and open that saved file again.  
There is my latest change.  
— YUKI

### DO NOT GUESS

Check the file name and location.  
Wait for saving to finish.  
If using cloud storage, check sync too.  
AutoSave and recovery vary by app.  
Do not assume either is active.

LATEST EDIT PRESENT → PRACTICE CHECK PASSED



Saved is not backed up: deletion, device failure or incomplete writes can still lose work.  
More RAM does not add file-storage space. A bigger SSD does not replace working RAM.

RAM is where you work.  
Storage keeps what you save.

Sources: CORSAIR memory guide · HP memory vs storage · Microsoft AutoSave

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YUKI TIME

QUORUM IS  
NOT A FENCE

SAFE FAILOVER NEEDS EXCLUSIVE OWNERSHIP

HARDWARE & INFRASTRUCTURE · EXPERT · 18 SEP 2026

1

SILENT IS NOT STOPPED

“ A stopped answering heartbeats.  
But it may still be writing.  
I will not start a second writer yet.  
— YUKI

Scenario: a single-writer service on shared storage.  
A is isolated from B and C; its stop is unconfirmed.

QUORUM · DECISION AUTHORITY

Which partition may manage the service?

FENCING · ENFORCED EXCLUSION

Can the old owner still touch the resource?



2

PROVE EXCLUSION

“ B and C have the votes.  
That does not switch A off.  
The fence must actually complete.  
— YUKI

A SEPARATE FAILURE PATH

Use validated power or storage fencing.  
Do not depend on A obeying a request.  
Avoid the failed cluster network.



3

THE PROMOTION GATE

ILLUSTRATIVE THREE-NODE CLUSTER · FIXED, EQUAL VOTES · MAJORITY = 2

PARTITION

QUORUM

FENCE A

START ON B

A loses contact  
A may still write

B + C hold 2 of 3  
Authority, not exclusion

Confirm isolation  
No access to resource

After safe recovery  
One eligible writer

Fencing failed or uncertain? Hold the replacement service. Never treat a timeout as proof of isolation.

4

TEST THE FAILURE

“ In our isolated lab, I partition A.  
B starts only after A is fenced.  
When fencing fails, B stays stopped.  
— YUKI

EVIDENCE BEFORE SPEED

Correlate cluster, fence and storage logs.  
Verify target identity and every access path.  
Test loss of the fencing path as well.  
Measure detection, fencing and recovery.  
Gate rejoin on repair and safe ownership.

PASS → NO OVERLAPPING WRITERS IN THE TEST



Scope: single-writer shared-resource HA. Quorum rules and fencing mechanisms vary by platform.  
An OS-neutral design review, not setup instructions. Run destructive tests only in an approved isolated lab.

Votes grant authority.  
Fencing enforces exclusion.

Sources: ClusterLabs Pacemaker fencing · Red Hat HA clusters · Microsoft quorum witness

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