— CHAPTER 07 · SERVER / STACK · WE BUILT THE OVERLAY — NOW WE CONFIGURE IT

One yaml key can decide whether the server even boots.

Configuration is where HAPI is most powerful and most dangerous. In Chapter 06 we vendored the overlay and saw the module layout. Today we open the control panel — and learn to read it without breaking it.

What you will be able to do

- Read the hapi.fhir config tree with confidence
- Tune storage_settings without losing data
- Recognise three 8.x pitfalls before they cost a debugging afternoon

— CONCEPT · APPLICATION.YAML — ONE TREE, EVERY KNOB

The starter binds all of its config under one root: hapi.fhir.

Navigate this tree and you can configure HAPI. Almost every switch you will ever touch hangs off the same single root — including the storage settings we tune next.

— HAPI.FHIR.* — THE CONFIG ROOT

hapi.fhir.server_address · server.path · cors.* · mdm_enabled · cr.enabled · cdshooks.enabled

Server base URL and path, plus the feature flags that switch whole subsystems on and off — master data management, clinical reasoning, and C D S hooks.

BRANCH · 1

Server

server_address, path, CORS — how clients reach the FHIR endpoint.

BRANCH · 2

Feature flags

mdm_enabled, cr.enabled, cdshooks.enabled — whole subsystems on or off.

BRANCH · 3

Binary + hooks

binary_storage_enabled and _mode, plus custom-interceptor-classes and custom-provider-classes.

BRANCH · 4

storage_settings

Nested in the same tree — the day-one data-behavior knobs, next slide.

— CONCEPT · STORAGE_SETTINGS — FOUR SETTERS THAT MATTER DAY ONE

Each of these changes data-loss behavior. Change them deliberately.

These nest under the same tree and map to JpaStorageSettings setters. Every one alters whether data survives — flip them in version control, never live by hand.

SETTER · 1

allow_multiple_delete

Off by default — HAPI refuses to delete more than one resource per operation. A safety rail; flip it only when you mean it.

SETTER · 2

expunge_enabled

Hard, permanent removal of history and deleted rows. Ships off; enabling brings an expunge batch size that bounds each chunk.

SETTER · 3

allow_external_referenc

Lets a resource point at a URL on another server. Pairs with treat_base_urls_as_local — which bases HAPI treats as its own.

SETTER · 4

enforce_referential_inte

On write and on delete — decides whether HAPI allows a dangling reference, or a delete of a still-referenced resource.

CascadingDeleteInterceptor + _cascade=delete walks references

Pair with _expunge=true to truly erase

— PITFALL 1 OF 3 · THE 8.X SURPRISE — A SERVER THAT WON'T START

Enable the email subscription channel — and the server may not boot.

— PATTERN THEN SYMPTOM

PATTERN — enabling the email channel makes autoconfig wire a mail-sender component.
SYMPTOM — with no S M T P configuration, the application context fails to build and the server dies on boot. No FHIR endpoint, just a stack trace about a missing mail-sender bean.

Ava

Exactly. One feature flag, and there is no endpoint to debug against.

Marcus · the fix

Supply the mail settings — host, port, from-address — or do not enable the email channel until you need it.

— PITFALL 2 OF 3 · THE SUBTLE ONE — A SILENT SEMANTIC FLIP

Same yaml, different behavior after a minor bump. No error, no warning.

— PATTERN THEN SYMPTOM

PATTERN — a boolean in the partitioning config changed its meaning across 8.x minor versions.

SYMPTOM — the same unchanged file produces different behavior after a minor version bump. The server now partitions, or stops partitioning, differently than you expected — the kind of bug you only find in production, weeks later.

Ava

Right — which is exactly why the rule from slide one matters most here.

Marcus · the fix

Re-read the flag against your pinned release's own application.yaml. Treat anything you read elsewhere as a pointer to check.

— PITFALL 3 OF 3 · UPSTREAM OF HAPI — THIS ONE IS SPRING

You edit a config that was never being read.

The starter ships named configuration profiles. Which one is active is decided by a precedence between an environment variable and what the yaml declares.

PATTERN

Profile activation

Named profiles, activated by a precedence between an environment variable and the yaml-declared default.

SYMPTOM

Wrong profile, silently

A stale env var or a yaml default quietly activates a different profile — wrong datasource, wrong flags, all applied without a word.

FIX

Be explicit + log it

Be singular about where activation comes from, and log the active profile on startup so you can see it.

COST

An hour, gone

You spend an hour editing config the server never reads — then doubt the key, not the profile.

UNVERIFIED — the exact shipped profile names and the precise activation precedence. Confirm both against your pinned tag before scripting the demo.

— DIAGRAM · WHEN AN OPERATION IS TOO BIG FOR ONE REQUEST

The heavy, long-lived operations run on the Batch2 framework.

Built on Spring Batch — chunked, persisted to the database, asynchronous, and resumable. A reindex over millions of resources survives a restart and picks up where it left off, instead of blocking a request thread and timing out.

BATCH2 · JOB 1

Reindex

Rebuilds search indexes after you add or change a search parameter. Surfaced via $reindex.

BATCH2 · JOB 2

Bulk export

The $export operation — streams large datasets out as N-D-J-S-O-N.

BATCH2 · JOB 3

Delete-expunge

Batched permanent removal from slide three — using the same expunge batch size.

- Chunked
- DB-persisted
- Asynchronous
- Resumable after restart

— COMPARISON · TWO OPT-IN TOGGLES — SAFETY AND PRESENTATION VS COST

Both are off by default, because both cost you something.

You turn each on where its benefit outweighs its price. Validation is the doorway to Chapter 08 — today, just know the toggle exists and what it costs.

— TOGGLE 1 — VALIDATION

RequestValidatingInterceptor · validation.requests_enabled

HAPI can validate every incoming request against the spec and your profiles — and responses too. Opt-in because validation is expensive per call. Turn it on where correctness matters more than throughput.

— TOGGLE 2 — NARRATIVE

narrative_enabled · DefaultThymeleafNarrativeGenerator

Auto-generates the human-readable narrative block inside resources. It costs C P U and adds to startup. If your clients render their own display, switch it off and reclaim that.

Next · Chapter 08 goes deep — profiling, StructureDefinitions, the instance validator

— CONCEPT · HAPI.FHIR.PARTITIONING.* — TURNING IT ON

Enabling is one switch. The semantics are version-sensitive.

There is a partitioning section in the tree where you enable it, declare your allowed partitions, and govern whether duplicate identifiers are allowed across a conditional create.

— HAPI.FHIR.PARTITIONING.*

enabled · allowed_partitions · conditional_create_duplicate_identifiers_enabled

Enabling partitioning is genuinely one flag. Understanding exactly what each related boolean does in your release is the hard part — and getting it wrong is how tenants leak into each other.

Ava

One switch — but, callback to slide five, the switch is easy and the semantics are version-sensitive.

Marcus · scope for today

Exactly. The production strategy — tenant registry, two-database wiring — is all Chapter 11.

— WALKTHROUGH · ONE SCREENFUL THAT BOOTS CLEAN AND DOES NOTHING DANGEROUS

The safe shape — not a promise of the exact key.

— APPLICATION.YAML — MINIMAL

```
spring.datasource.url: jdbc db url
hapi.fhir.server_address: base url
hapi.fhir.storage_settings.allow_multiple_delete: false
hapi.fhir.narrative_enabled: false  ^verify
hapi.fhir.partitioning.enabled: false  ^verify
subscription email channel: off  ^verify
```

● CALLBACK · SLIDE 02

The tree

Server block and base path — every line hangs off hapi.fhir.

● CALLBACK · SLIDE 03

One storage setter

Left at its safe default, stated explicitly so we own it.

● CALLBACK · SLIDES 04 TO 06

Three things off

Email channel, partitioning, narrative — the three pitfalls, deliberately disabled so it boots.

● Any line marked ^verify is one to confirm against your pinned tag — I am showing the safe shape, not asserting the exact key.

— TRY IT YOURSELF · SEE THE SYMPTOM BEFORE PRODUCTION DOES

Boot it clean. Then break it on purpose.

— THE EXERCISE — THREE STEPS

1 · Boot your pinned HAPI image with the minimal yaml from slide 10 — confirm it comes up clean.
2 · Flip narrative_enabled and watch the startup logs change.
3 · Enable the email subscription channel with no S M T P settings — reproduce the slide-04 boot failure with your own eyes.

Recap — and the discipline

- One config tree
- Four storage setters
- Three Batch2 jobs
- Pin the tag · verify the email path, the partitioning boolean, the profile precedence
- Next · Chapter 08 · Validation becomes a discipline — profiling, StructureDefinitions, slicing, the instance validator