

Study Plan — NGINX Cookbook, 3rd Edition

User Story Template & Story Card Definition

October 23, 2025

Contents

1 How to Use This Template

1. Start with the **one-sentence story** (persona, goal, value).
2. Add **acceptance criteria** in Gherkin (Given/When/Then).
3. Capture **non-functional requirements** (performance, security, accessibility, ...).
4. Confirm **Definition of Ready** (DoR) before sprint; confirm **Definition of Done** (DoD) before acceptance.
5. Keep stories **INVEST**: Independent, Negotiable, Valuable, Estimable, Small, Testable.

2 Study Plan — Story Cards by Chapter

HS-1 — Getting Started

Epic / Feature	Foundations
Business Value	Establish a clean install and configuration layout to reduce integration risk and speed future chapters.
Priority / Estimate	Priority: Must SP: 3
Persona	Developer or SRE on a fresh machine
Dependencies	Linux host or container; build tools; Git
Assumptions / Risks	Package vs. source builds diverge; misconfigured services or ports

Story *As a Developer or SRE on a fresh machine, I want to Getting Started so that Establish a clean install and configuration layout to reduce integration risk and speed future chapters..*

Non-Functional Performance Security Reliability Accessibility Privacy i18n

Acceptance Criteria (BDD)

Scenario Happy path

Given the target repositories, environments, and context are available

When the Hands-on Objectives for this chapter are executed

Then the stated Outcomes/Deliverables for this chapter are produced, reviewed, and published

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Tasks

- Create labs/01-install; initialize Git.
- Install with apt (or distro equivalent); validate with nginx -t and a default site.
- Build from source enabling PCRE, zlib, and TLS; save nginx -V output to the repo.
- Add a systemd override for limits and graceful reload; verify nginx -s reload.
- Commit baseline config layout with conf.d/ and sites-available/sites-enabled.

HS-2 — HTTP Core

Epic / Feature	Configuration Hygiene
Business Value	Provide a predictable layout and reload-safe iteration to reduce errors and speed delivery.
Priority / Estimate	Priority: Must SP: 3
Persona	Developer building the first site
Dependencies	Chapter 1 complete; text editor; curl
Assumptions / Risks	Confusion about include order; missing reload tests cause outages

Story *As a Developer building the first site, I want to HTTP Core so that Provide a predictable layout and reload-safe iteration to reduce errors and speed delivery..*

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Tasks

- Create labs/02-basics; define `http`, `server`, and `location` blocks.
- Move site configs into `sites-available` with symlink from `sites-enabled`.
- Add `gzip`, a common `log_format`, and a maintenance switch via `map`.
- Run `nginx -t` and `nginx -T`; capture outputs in the repo.
- Write a tiny script thatcurls a few endpoints and verifies 200/404/405 responses.

HS-3 — Routing and HTTP/2

Epic / Feature	Routing
Business Value	Route requests correctly and enable modern protocol support to improve UX and capacity.
Priority / Estimate	Priority: Must SP: 3
Persona	SRE responsible for front-door behavior
Dependencies	Certificate or self-signed for local testing
Assumptions / Risks	Locations mis-ordered; cache headers set incorrectly

Story *As a SRE responsible for front-door behavior, I want to Routing and HTTP/2 so that Route requests correctly and enable modern protocol support to improve UX and capacity..*

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Tasks

- Create labs/03-http; implement /, /static/, and /api with correct precedence.
- Enable TLS and HTTP/2 on the listener; verify ALPN negotiation.
- Add cache-control for static assets and ETag where appropriate.
- Validate location priority with explicit test requests; record results.

HS-4 — Security and Policy

Epic / Feature	Defense in Depth
Business Value	Centralize safe defaults (TLS params, limits, and canonical headers) to reduce risk and variance.
Priority / Estimate	Priority: Must SP: 3
Persona	Security-minded operator
Dependencies	Chapters 2 and 3 complete
Assumptions / Risks	Overzealous rate limits can block users; TLS misconfiguration causes handshake failures

Story *As a Security-minded operator, I want to Security and Policy so that Centralize safe defaults (TLS params, limits, and canonical headers) to reduce risk and variance..*

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Tasks

- Create `labs/04-modules`; add a map-based include for common headers.
- Add `limit_req_zone` and `limit_conn_zone`; test with a simple load tool.
- Create `ssl/params.conf` with ciphers, curves, and stapling; reference from servers.
- Document a safe CORS policy and error mapping.

HS-5 — Dynamic Backends

Epic / Feature	Application Integration
Business Value	Serve dynamic content efficiently via FastCGI and uWSGI.
Priority / Estimate	Priority: Should SP: 3
Persona	Full-stack engineer
Dependencies	php-fpm or uWSGI installed; example apps
Assumptions / Risks	Incorrect FastCGI params; buffer/timeout mismatches

Story *As a Full-stack engineer, I want to Dynamic Backends so that Serve dynamic content efficiently via FastCGI and uWSGI..*

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Tasks

- Create labs/05-php-python; add a PHP info page behind FastCGI.
- Configure Django via uWSGI and an NGINX vhost.
- Document buffer and timeout tuning choices.

HS-6 — Gateway

Epic / Feature	Reverse Proxy
Business Value	Expose upstream services reliably with caching and resilient error handling.
Priority / Estimate	Priority: Must SP: 3
Persona	Platform engineer
Dependencies	Upstream app at port 3000 or similar
Assumptions / Risks	Missing real-IP forwarding; WebSocket upgrade issues

Story *As a Platform engineer, I want to Gateway so that Expose upstream services reliably with caching and resilient error handling..*

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Tasks

- Create labs/06-revproxy; proxy to a local Node API and a static site.
- Configure cache bypass on auth headers; set appropriate proxy timeouts.
- Verify WebSocket upgrade and error handling behavior.

HS-7 — Scale and Throughput

Epic / Feature	Load Balancing
Business Value	Improve throughput and resilience via load balancing and connection tuning.
Priority / Estimate	Priority: Should SP: 3
Persona	SRE benchmarking performance
Dependencies	Three backend containers; benchmarking tool
Assumptions / Risks	Neglecting upstream failure handling; misleading benchmarks

Story *As a SRE benchmarking performance, I want to Scale and Throughput so that Improve throughput and resilience via load balancing and connection tuning..*

Non-Functional (Performance) (Security) (Reliability) (Accessibility) (Privacy) (i18n)

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Tasks

- Create `labs/07-lb-optim`; define an upstream with three nodes.
- Set `max_fails` and `fail_timeout`; run before/after measurements.
- Experiment with `least_conn` and `keepalive`; capture metrics.
- Document findings in `bench-notes.md`.

HS-8 — Containers and Deployment

Epic / Feature	Cloud-Ready Images
Business Value	Use containers for reproducible stacks and faster delivery.
Priority / Estimate	Priority: Should SP: 3
Persona	DevOps engineer
Dependencies	Docker and Compose installed
Assumptions / Risks	State drift inside containers; missing read-only FS

Story *As a DevOps engineer, I want to Containers and Deployment so that Use containers for reproducible stacks and faster delivery..*

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Tasks

- Create labs/08-cloud-docker with Dockerfile and docker-compose.yml.
- Add healthchecks and environment overlays.
- Document image hardening steps and entrypoint.

HS-9 — Automation

Epic / Feature	Ansible Deploy, Manage, and Auto-Update
Business Value	Make changes safe, repeatable, and observable with a simple playbook and CI gate.
Priority / Estimate	Priority: Should SP: 3
Persona	Infra engineer
Dependencies	Ansible controller; test hosts or containers with SSH
Assumptions / Risks	Careless rolling updates; template drift

Story *As a Infra engineer, I want to Automation so that Make changes safe, repeatable, and observable with a simple playbook and CI gate..*

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Tasks

- Create labs/09-ansible/roles/nginx; add install, config, and service tasks.
- Write site.yml and run against two targets with -check and then -diff.
- Add a CI lint-and-test workflow that runs nginx -t before deploy.

HS-10 — Certificates and Apps

Epic / Feature	Reusable Templates
Business Value	Standardize TLS and app includes so launches are fast and reliable.
Priority / Estimate	Priority: Could SP: 2
Persona	Platform owner
Dependencies	Local CA or staging certs; WordPress or Nextcloud sample
Assumptions / Risks	Certificate chain failures; large upload limits for apps

Story *As a Platform owner, I want to Certificates and Apps so that Standardize TLS and app includes so launches are fast and reliable..*

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Tasks

- Create labs/10-cases/ssl; script staging cert issuance.
- Prepare ssl/params.conf include; reference across vhosts.
- Deploy a sample app; validate uploads and caching behavior.

HS-11 — Diagnostics

Epic / Feature	Troubleshooting
Business Value	Speed incident resolution through systematic debugging and logging.
Priority / Estimate	Priority: Must SP: 3
Persona	On-call SRE
Dependencies	nginx-debug binary or increased log level; test client; broken configs to diagnose
Assumptions / Risks	Cognitive pressure during incidents; red herrings

Story *As a On-call SRE, I want to Diagnostics so that Speed incident resolution through systematic debugging and logging..*

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Tasks

- Create labs/11-troubleshooting: 403 perms, bad FastCGI params, broken includes.
- Resolve each and add a short postmortem with evidence (log excerpts, curl output).
- Update a troubleshooting decision tree.

HS-12 — Integration

Epic / Feature	Capstone
Business Value	Demonstrate production-like competency end to end.
Priority / Estimate	Priority: Must SP: 5
Persona	Engineer presenting a portfolio artifact
Dependencies	Completed chapters; Docker and Ansible
Assumptions / Risks	Scope creep; timeboxing required
Story	<i>As a Engineer presenting a portfolio artifact, I want to Integration so that Demonstrate production-like competency end to end..</i>
Non-Functional	Performance Security Reliability Accessibility Privacy i18n
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Tasks

- Compose stack in `labs/capstone`; reuse includes and templates.
- Add JSON logs and a quick view.
- Capture a short demo script and screenshots.