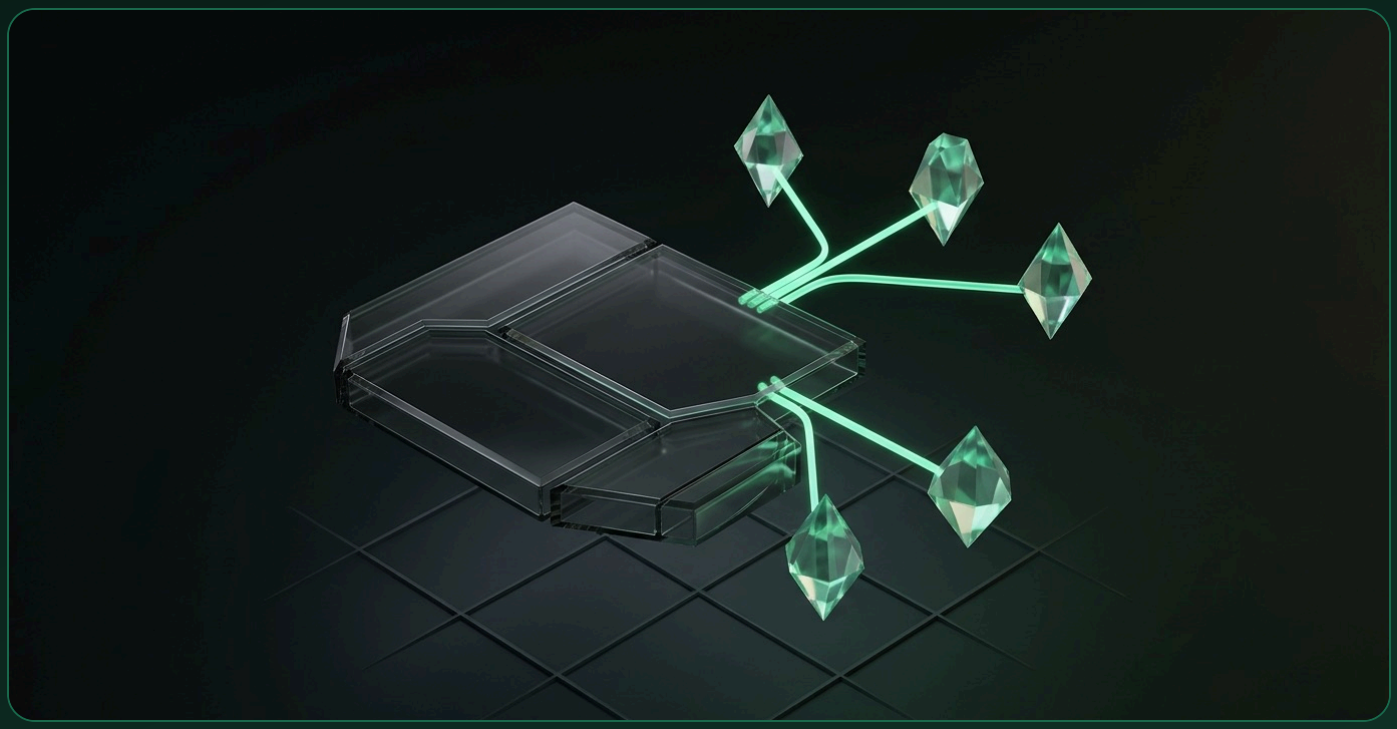
OPEN HARNESSES SERIES • OPENCODE TUI FIELD GUIDE

OpenCode TUI, Plan/Build Agents & Routing

Master the open-source, provider-agnostic terminal coding harness—switching cleanly between read-only Plan and full-access Build modes with `Tab`, routing 75+ cloud and local models in `opencode.json`, closing compiler loops via native LSP, and rewinding edits with Git-backed `/undo` snapshots.

- `Tab` Plan vs. Build Modes
- 75+ Provider Routing
- Native LSP Diagnostics
- Git Snapshot `/undo` & `/redo`
- `.opencode/agents/*.md`
- `/init`, `/compact` & `/share`



Zero Vendor Lock-In

Pair Claude, GPT, Gemini, DeepSeek, OpenCode Zen, and local Ollama models inside one unified keyboard-first TUI.

Compiler-Verified Edits

Built-in Language Server Protocol clients stream real type and syntax errors back to the agent automatically after every edit.

Fearless Git Time-Travel

Instant `/undo` and `/redo` revert both conversation turns and working-tree file changes together in milliseconds.

Why OpenCode: One Terminal Harness, Every Frontier & Local Model

Single-vendor coding CLIs tie your workflow, shortcuts, and team habits to one billing account. **OpenCode** decouples the **developer harness**—TUI ergonomics, file indexing, LSP diagnostics, session snapshots, and subagents—from the underlying model API so you can assign the sharpest brain to every task.

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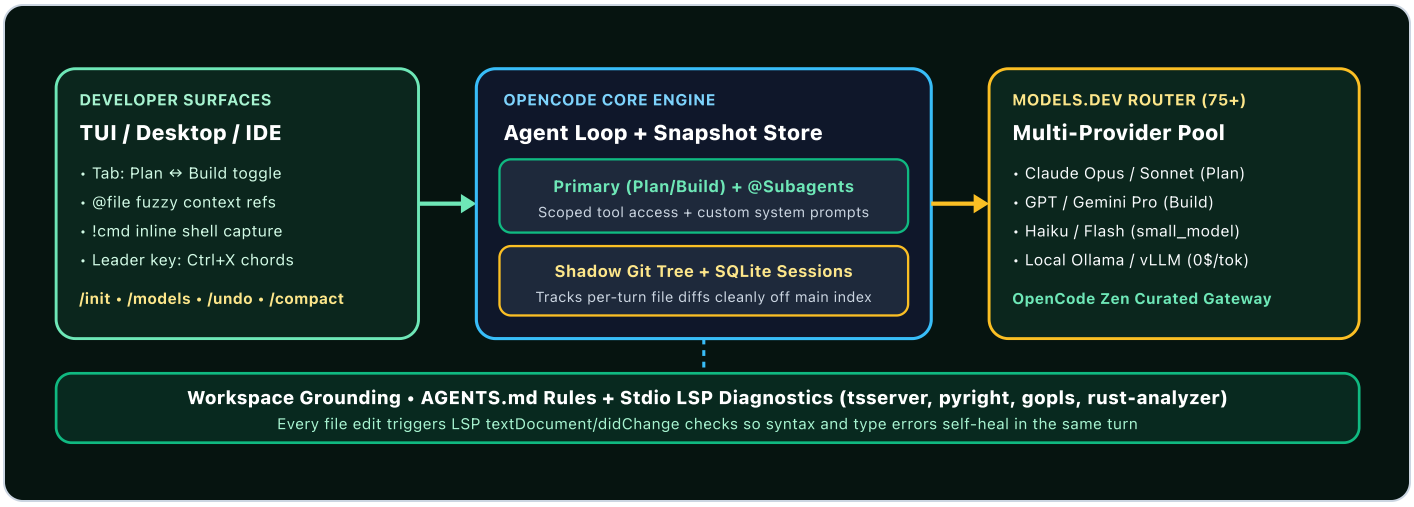
Architecture: Client-Server Core Driving TUI, LSP & 75+ Model Endpoints



Two-Tier Model Routing Cuts Spend by 50%+

Set a frontier reasoning model as your `plan` agent brain, a fast coding flagship for `build`, and a lightweight `small_model` in `opencode.json` for background session titles, summaries, and subagent exploration.

Installation, Credential Vault & Provider Strategy Matrix

Install OpenCode via native binary, Homebrew, or npm, link your preferred cloud subscriptions or local Ollama server via `/connect`, and run `/init` inside your repository to generate a tailored `AGENTS.md`.

1 60-Second Install Across macOS, Linux & WSL

```
# Official V2 install script or Homebrew / npm
curl -fsSL https://opencode.ai/v2/install | bash
brew install anomalyco/tap/opencode-v2
npm install -g @opencode/cli@latest

# Launch inside your repo & bootstrap AGENTS.md
cd ~/code/my-app && opencode
# Inside TUI: run /connect then /init
```

2 Authenticate Providers (`opencode auth`)

Run `/connect` inside the TUI or `opencode auth login` in your shell. Credentials live outside Git at `~/.local/share/opencode/auth.json`:

```
opencode auth login     # OAuth / API key wizard
opencode auth list      # Verify connected providers
opencode models         # List all resolved model IDs
```

Provider & Model Strategy Matrix

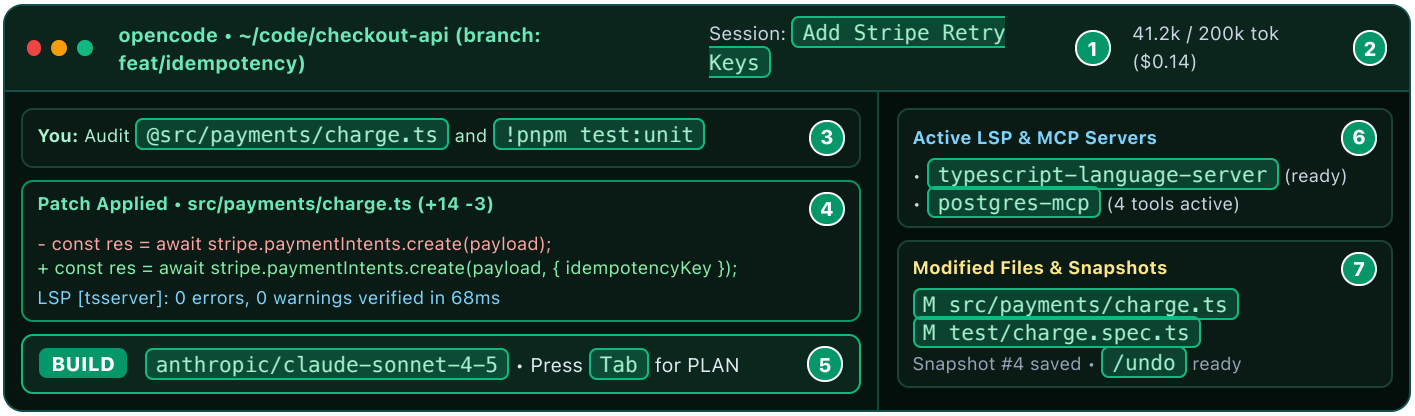
Provider Path	Example `model` String	Sweet Spot in OpenCode	Billing / Privacy Model
Anthropic / OpenAI	`anthropic/claude-sonnet-4-5` `openai/gpt-5`	Complex multi-file refactors, architectural `Plan` blueprints, deep debugging	Direct API key or supported Pro/Max OAuth flows
Google Gemini	`google/gemini-2.5-pro` `google/gemini-2.5-flash`	1M-token monorepo sweeps, large log analysis, ultra-fast `small_model`	AI Studio API key or Vertex AI enterprise IAM
OpenCode Zen	`opencode/claude-sonnet-4-5`	Zero-setup curated coding models benchmarked specifically for the OpenCode harness	Single unified pay-as-you-go balance via `/connect`
Local Ollama / vLLM	`ollama/qwen3-coder:30b`	Air-gapped codebases, offline flights, unlimited zero-marginal-cost edits	100% local hardware (set `num_ctx` ≥ `32768` !)

Config Precedence Order (Highest Wins)

OpenCode merges settings cleanly from general to specific: **1. Remote org defaults** → **2. Global** `~/.config/opencode/opencode.json` → **3. Env var** `OPENCODE_CONFIG` → **4. Project root** `opencode.json`. Commit project rules and model roles to Git while keeping API keys strictly in `auth.json` or `{env:VAR_NAME}` references.

Annotated Tour: Navigating the OpenCode TUI Like a Pro

OpenCode's keyboard-driven TUI keeps diffs, compiler diagnostics, token budgets, and active agent modes visible in one glance—controlled via quick slash commands and the `Ctrl+X` leader key.



Control Legend: Essential Zones & Leader Chords

1 **Session Header (`/sessions` or `Ctrl+X l`):** Jump between parallel task histories, rename threads, or fork a conversation cleanly.

2 **Live Context & Cost Meter:** Tracks exact input/cached tokens and dollar spend; run `/compact` before hitting 75% capacity.

3 `@` **File Fuzzy Search &** `!` **Shell Bar:** Type `@` to attach exact files/symbols or start a line with `!` to run a command and pipe stdout into context.

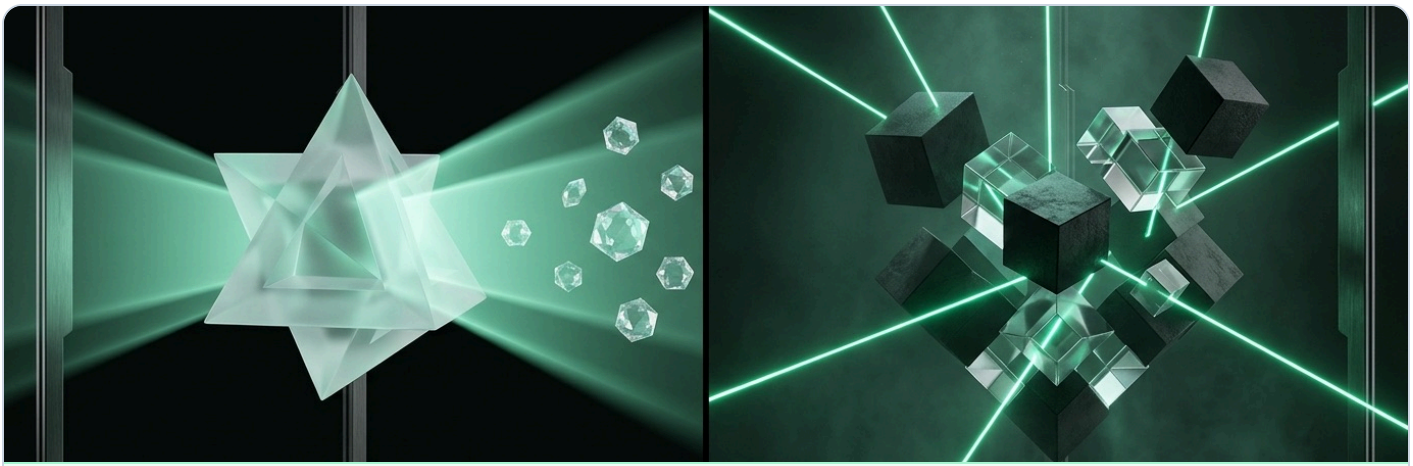
4 **Inline Diff + Automatic LSP Check:** Every edit renders unified color diffs and immediately reports compiler diagnostics from active language servers.

5 **Mode Badge & Model Selector (`Tab` / `Ctrl+X m`):** Press `Tab` to toggle **PLAN** ↔ **BUILD**, or `/models` to swap providers mid-thread.

6 **LSP/MCP Status &** 7 **Snapshot Tree:** Confirm healthy language servers and track every file touched since turn 1 for instant `/undo` rollback.

The `Tab` Key Habit: Separate Architecture From Mutation

The fastest way to wreck a codebase is letting an eager agent edit ten files before understanding how your auth middleware works. Pressing `Tab` switches OpenCode into **Plan Mode**—physically disabling file edits and destructive shell commands while the agent maps out a surgical blueprint.



Two Modes, One Keystroke (`Tab`): Inspect, search, and crystallize edge cases safely inside the read-only Plan frame (left) before flipping to Build mode (right) to execute verified multi-file patches and tests.

1 `PLAN` Mode (Read-Only Architect)

- **Hard Write Lock:** File creation, patch edits, and mutating bash tools are denied or gated by permission policy.
- **Deep Exploration:** Uses `grep`, `glob`, file reads, and `@explore` subagents to verify call sites before proposing changes.
- **Best Model Choice:** Route to high-reasoning models (`claude-opus-4-6`, `gpt-5`, or `gemini-2.5-pro`).

2 `BUILD` Mode (Full-Access Implementer)

- **Full Execution Loop:** Applies surgical patches, receives automatic LSP compiler feedback, and runs test suites.
- **Follows the Approved Plan:** Executes step by step against the blueprint already agreed upon in the same session context.
- **Best Model Choice:** Fast, high-throughput coding models (`claude-sonnet-4-5` or local `qwen3-coder`).

The 4-Step Plan → Review → Build Rhythm

```
1. Press [Tab] -> Confirm badge reads PLAN.
2. Prompt: "Trace @src/auth/session.ts and propose a 3-step plan to rotate refresh tokens."
3. Challenge assumptions ("Keep backward compatibility for mobile v2 tokens; skip DB migration").
4. Press [Tab] -> Badge flips to BUILD -> Prompt: "Execute steps 1-3 and run !pnpm test auth"
```

Multi-Model Routing & Markdown Specialist Subagents

Instead of paying flagship prices on every grep or code review, assign tailored models, temperatures, and tool boundaries per agent role in `opencode.json` or drop self-contained Markdown files into `.opencode/agents/`.

1. Role-Based Routing in `opencode.json`

```
{
  "$schema": "https://opencode.ai/config.json",
  "model": "anthropic/claude-sonnet-4-5",
  "small_model": "google/gemini-2.5-flash",
  "agent": {
    "plan": {
      "model": "openai/gpt-5",
      "temperature": 0.1
    },
    "build": {
      "model": "anthropic/claude-sonnet-4-5"
    }
  }
}
```

2. Custom Subagent (`.opencode/agents/sec.md`)

```
---
description: Audits diffs for OWASP & auth bugs
mode: subagent
model: google/gemini-2.5-pro
temperature: 0.1
tools:
  write: false
  edit: false
  bash: false
---
Review changed files for SQLi, SSRF, IDOR, and
leaked secrets. Cite file:line and minimal fix.
```

Invoking Subagents: Mention any subagent directly in chat (for example, `@sec audit my staged changes` or built-in `@explore find where webhook signatures are verified`), or let your primary agent delegate automatically based on its `description` frontmatter. Navigate between parent and child subagent threads anytime using `Ctrl+X Right` / `Left`.

Color-Coded Blueprint: High-Signal OpenCode TUI Prompt

[In PLAN mode] Ask @explore to map every caller of @src/billing/UsageMeter.ts and inspect recent test failures from !vitest run billing, draft a zero-downtime batching plan using our configured gpt-5 planner, then switch via Tab to BUILD, resolve any tsserver LSP diagnostics to zero, and run @sec before committing so we can /undo cleanly if edge cases fail.

Mode + Subagent | @File & !Shell Context | Model Role Routing | LSP Zero-Error Gate | Review & Snapshot Safety

Native LSP Loops, `AGENTS.md` & Token Compaction

Most terminal agents waste three turns running full builds just to discover a missing import. OpenCode spawns language servers directly behind the scenes, streaming instant compiler diagnostics into the agent turn the moment a file is written.

1 Built-In & Custom LSP Configuration

OpenCode auto-detects TypeScript, Python, Go, Rust, Elixir, Zig, C#, and Astro language servers. Customize or disable servers in `opencode.json`:

```
{
  "lsp": {
    "pyright": {
      "env": { "VIRTUAL_ENV": ".venv" }
    },
    "eslint": { "disabled": true }
  }
}
```

2 High-Signal `AGENTS.md` via `/init`

Running `/init` scans your build scripts, lint rules, and folder conventions to write `AGENTS.md` (also compatible with `CLAUDE.md` fallback):

- Pin exact single-file test commands (`pnpm vitest run path/to/file`).
- List architectural boundaries and forbidden directories.
- Load shared team docs via `"instructions": ["docs/arch.md"]`.

Context Window Hygiene: Staying Fast Past Turn 30

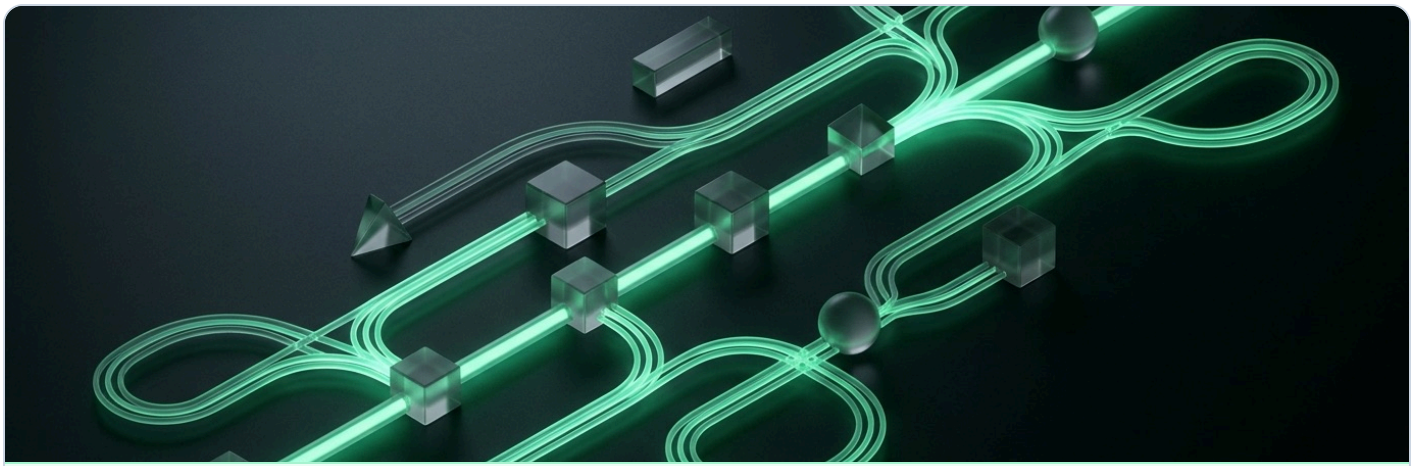
Command / Shortcut	What It Does Under the Hood	When to Trigger It
`/compact` (`Ctrl+X c`)	Summarizes prior turns, resolved tool logs, and key decisions into a tight handoff block	After finishing one feature slice or whenever token usage crosses ~65–75%
`/new` (`Ctrl+X n`)	Starts a brand-new clean conversation while preserving `AGENTS.md` project rules	Switching to an unrelated bug or subsystem where prior files add noise
`/editor` (`Ctrl+X e`)	Opens your `$EDITOR` (Neovim, VS Code, Zed) to compose multi-line specs comfortably	Drafting detailed acceptance criteria, pasted stack traces, or table schemas
Clipboard Image Paste	Drag-and-drop or paste UI screenshots straight into the TUI prompt box	Fixing CSS alignment bugs, mobile overflow, or matching a wireframe

Delegate Broad Searches to `@explore` to Protect Main Context

Reading 20 candidate files directly inside your main Build thread bloats every subsequent turn's prompt cache. Ask `@explore` to locate exact symbols first; only its concise `file:line` summary enters your main session.

Fearless Experimentation with `/undo` & `/redo` Snapshots

Traditional `git reset --hard` wipes your manual edits or pollutes commit history. OpenCode maintains a private shadow Git object store behind your repository so every turn is atomically reversible without touching your real Git staging index.



Coupled Code + Context Rewind: Running `/undo` rolls back both the workspace files and the bad conversation turn simultaneously, letting you refine your prompt and replay cleanly from a known-good checkpoint.

1 How `/undo` Beats Follow-Up Nagging

When an agent goes down the wrong architectural path, arguing with it in turn 6 leaves five turns of broken code polluting its context window. Instead:

1. Run `/undo` (`Ctrl+X u`) once or twice to restore exact pre-turn files; your original prompt pops right back into the input box.
2. Add the missing constraint or `@file` reference and hit `Enter`.
3. Changed your mind? Run `/redo` (`Ctrl+X r`) to restore the reverted turn and patches intact.

2 Comparing Two Models on One Bug

Benchmark two providers head-to-head on your real repo in under two minutes:

1. Let Model A attempt the fix and run `!pnpm test`.
2. Run `/undo` to rewind the working tree to its exact starting state.
3. Switch models with `/models` (`Ctrl+X m`) to Model B and submit the exact same pre-filled prompt.

Git Repository Required for Snapshot Tracking

OpenCode's `/undo` and `/redo` engine relies on your folder being initialized with `git init`. Always initialize Git in scratch prototypes before starting heavy multi-file Build loops.

5 Real-World Copy-Paste Recipes

Copy these five ready-to-use configurations and slash commands into your project to unlock hybrid cloud/local routing, custom slash commands, local Ollama 32K coding, and session continuation.

Recipe & Goal	Copy-Paste Snippet / Config	Expected Outcome
1. Cloud Planner + Local Ollama Coder	`{"agent":{"plan":{"model":"anthropic/claude-opus-4-6"},"build":{"model":"ollama/qwen3-coder:30b"}},"provider":{"ollama":{"npm":"@ai-sdk/openai-compatible","options":{"baseURL":"http://localhost:11434/v1"}}}}`	Uses frontier reasoning in `PLAN` mode and zero-cost local GPU tokens in `BUILD` mode.
2. Custom `/test-fix` Slash Command	Save `.opencode/commands/test-fix.md`: `---` `description: Run suite and fix failures` `---` `Failure output: !`pnpm test --run` — fix root cause for $ARGUMENTS without weakening assertions.`	Typing `/test-fix auth` executes tests first, injects stdout, and fixes the failing module.
3. Resume Latest Session From Shell	`opencode --continue` (or `opencode -s ses_01JXYZ...`)	Reopens your exact prior TUI thread, snapshot chain, and active model immediately.
4. Auto-Format Files After Every Edit	In `opencode.json`: `{"formatter":{"biome":{"command":["npx","@biomejs/biome","check","--write","$FILE"],"extensions":[".ts",".tsx",".json"]}}}`	Runs Biome automatically on every touched file so agent diffs always match repo style.
5. Export Full Session JSON Audit Log	`opencode session export ses_01JXYZ > session-audit.json`	Dumps complete prompts, tool calls, token counts, and diffs for team postmortems or evals.

Dynamic Shell Injection Inside Custom Commands

Inside `.opencode/commands/*.md` templates, wrapping a command in exclamation-backtick syntax runs that shell command locally (such as `git diff --staged` or test runners) and splices its fresh output straight into the prompt before sending it to the LLM.

Session Sharing Controls, Privacy Locks & IDE Companions

OpenCode makes code review walkthroughs effortless with one-command share links, while giving enterprise security teams a single config switch to lock sharing off completely across private repositories.

1 Three Session `share` Modes

Configure `"share"` in `opencode.json` to match your repo's confidentiality level:

- `"manual"` **(Default):** Nothing leaves your machine unless you explicitly run `/share` (`Ctrl+X s`); revoke anytime with `/unshare` .
- `"disabled"` **(Enterprise Lock):** Hard-blocks `/share` in proprietary repos so source snippets can never be published to a public URL.
- `"auto"` **:** Automatically creates shareable links for open-source PR walkthroughs.

2 Secret & Env Variable Substitution

- **Never Hardcode Keys:** Reference environment secrets in `opencode.json` with `"{env:LITELLM_API_KEY}"` or file contents via `"{file:~/.secrets/token}"` .
- **Block Sensitive Reads:** Add `.env*` , `*.pem` , and `secrets/` deny rules under `permission.read` so prompts never ingest raw credentials.
- **Zero-Telemetry Local Stack:** Pair `"share": "disabled"` with local Ollama or VPC Bedrock/Vertex endpoints for full data residency.

3 VS Code, Cursor & Neovim Companion

Run OpenCode inside your editor's integrated terminal pane: active file selections, line ranges, and diagnostic problems jump straight into your TUI prompt with a single shortcut while diffs update live in editor buffers.

4 Themes & TrueColor Terminal Tuning

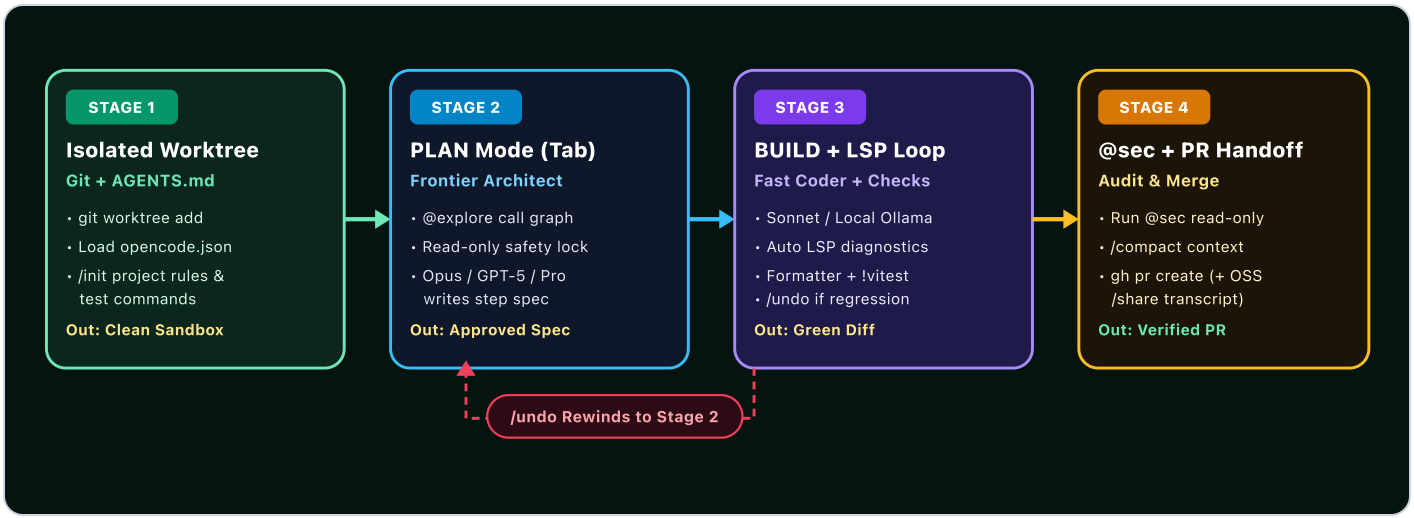
Run `/themes` (`Ctrl+X t`) and pick `system` or built-in palettes (Catppuccin, Tokyonight, Gruvbox, Rose Pine). Use a TrueColor terminal (Ghostty, Kitty, WezTerm, iTerm2, or Alacritty) for crisp diff highlights.

Commit `"share": "disabled"` on Day One in Private Client Repos

Adding `{"share": "disabled"}` to your repository's checked-in `opencode.json` protects every developer on the team from accidentally running `Ctrl+X s` during a late-night debugging session.

Cross-Tool Synergy: Worktrees + Plan/Build + LSP + PR Review

Combine isolated Git worktrees, multi-provider Plan/Build routing, native LSP verification, and shareable PR walkthroughs into a repeatable high-velocity engineering loop.



A Parallel Sessions Across Git Worktrees

Run three independent `opencode` TUI instances inside three `git worktree` directories (for example inside tmux or Ghostty splits) so each agent gets isolated shadow snapshots, ports, and LSP caches.

B Pairing With Part 2: Plugins, Tools & CI

Once your interactive TUI workflow is dialed in, turn to the companion handbook (*OpenCode Plugins, Custom Tools, Servers & CI*) to wire TypeScript hooks, headless `opencode serve`, and GitHub Actions automation.

Troubleshooting Clinic & 6-Point Pre-Flight Checklist

Fix the seven most frequent TUI, local-model, LSP, and snapshot hiccups in ten seconds flat, then run the 6-point checklist when onboarding any new repository.

Symptom / Issue	10-Second Root-Cause Fix
1. Local Ollama model forgets system tools or loops	Ollama defaults to a tiny `4096` token context window! Build a Modelfile with `PARAMETER num_ctx 32768` (or `65536`) before selecting it in OpenCode.
2. Agent refuses to edit files even when asked	Check the bottom-left mode badge—you are still in read-only `PLAN` mode! Press `Tab` once to flip the badge to `BUILD`.
3. `/undo` reports snapshot unavailable	The directory is not a Git repository. Run `git init` at the workspace root so OpenCode can initialize its shadow snapshot tree.
4. LSP diagnostics missing for Python or TypeScript	Language server binary isn't on `PATH` or wrong venv is active. Install `pyright` / `typescript-language-server` or pass `VIRTUAL_ENV` under `lsp` in `opencode.json`.
5. Newly added API key doesn't show models in `/models`	Run `/connect` inside the TUI, check `opencode auth list`, or run `opencode reload` before `opencode models`.
6. Diff colors look washed out inside tmux	Enable 24-bit TrueColor in `~/.tmux.conf` (`set -ga terminal-overrides ",xterm-256color:Tc"`) and select `/themes` → `system`.
7. Responses slow down & cost spikes after 40 turns	Long raw tool outputs are re-sent each turn. Run `/compact` (`Ctrl+X c`) to distill history or start a fresh thread with `/new`.

6-Point Pre-Flight Checklist for Every New Repo

- [ ] **Bootstrap `AGENTS.md`:** Ran `/init` and pinned fast single-file test and lint commands.
- [ ] **Split Model Roles:** Configured frontier `plan`, fast `build`, and cheap `small_model` in `opencode.json`.
- [ ] **Lock Sharing Policy:** Set `"share": "disabled"` in checked-in config for private or client repos.
- [ ] **Verify Active LSPs:** Confirmed green language server status on first file touch for instant error loops.
- [ ] **Plan Before Build:** Started complex tasks in `Tab` (`PLAN`) mode with `@explore` before mutating files.
- [ ] **Rewind, Don't Argue:** Used `/undo` on off-track turns and `/compact` between feature milestones.