

# The Twelve-Factor App

The Twelve-Factor App is a methodology for building distributed applications that run in the cloud and are delivered as a service. These best practices help developers build applications that are portable, scalable, agile, reliable and consistent.

**1. Codebase.** Use one codebase, even when building cross-platform apps. Address the needs of specific devices with version control.

**2. Dependencies.** Explicitly declare and isolate all dependencies.

**3. Configuration.** Design the app to read its config from the environment.

**4. Backing services.** Treat back-end services as attached resources to be accessed with a URL or other locator stored in config.

**5. Build, release, run.** Strictly separate build and run stages.

**6. Processes.** Execute the app as one or more stateless processes. Data that must be persistent should be stored in a stateful backing service.



**7. Port binding.** Use port binding to export services.

**8. Concurrency.** Scale out apps horizontally, not vertically.

**9. Disposability.** Use fast startups and graceful shutdowns to maximize robustness.

**10. Parity.** Facilitate continuous deployment by ensuring that development, staging and production environments are as similar as possible.

**11. Logs.** Treat logs as event streams.

**12. Admin processes.** Run admin tasks as one-off processes from a machine in the production environment that is running the latest production code.

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