



# Architecture & Deployment

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## How to improve our basic deployment

The basic SFTP deployment of the PHP TodoList has several flaws which we will fix during the rest of the course:

- Transferring files manually through SFTP is slow and error-prone. We will use **Git** to reliably transfer files from our central codebase and easily keep our deployment up-to-date over time.
- Hardcoding configuration is a bad practice. We will use **environment variables** so that our application can be dynamically configured and deployed in any environment without changing its source code.
- Starting our application manually is not suitable for a production deployment. We will use a **process manager** to manage the lifecycle of our application: starting it automatically when the server boots, and restarting it automatically if it crashes.
- Accessing a web application through an IP address is not user-friendly. We will obtain a domain and configure its DNS zone file so that our application is accessible with a human-readable **domain name**.
- Using a non-standard port is not user-friendly either. We will run the application on **port 80 or 443** so that the end user does not have to specify a port in the browser's address bar.
- Running our application server directly on port 80 or 443 will cause a problem: only one process can listen on a given port at the same time. We need another tool to support **multiple production deployments on the same server**. That will be the job of a reverse proxy like Apache or nginx.
- Our application is not secure as indicated by the browser, because it is served over HTTP and not HTTPS. We will obtain a **TLS/SSL certificate** signed by a trusted certificate authority so that our application can be served over HTTPS and recognized as secure by browsers.

- The PHP Development Server is not meant to deploy applications in production environments. We will use the **FastCGI Process Manager** to perform a production-grade deployment, making our application more resilient and able to serve more clients concurrently.

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