**Ubuntu Deployment Options**

**1. Traditional VPS / Server Deployment**

**Requirements:**

* Ubuntu 20.04+
* Node.js 18+
* PostgreSQL
* NGINX

**Process:**

1. Clone your repository onto the Ubuntu server
2. Install dependencies using npm install
3. Set up the PostgreSQL database
4. Configure environment variables (DeepSeek API key, database URL, etc.)
5. Use **PM2** or **systemd** for process management
6. Configure **NGINX** as a reverse proxy

**2. Docker Containerization**

* Package the application into Docker containers
* Provides easier scaling and environment consistency
* Use **Docker Compose** for a multi-container setup (application + database)

**3. Cloud Platform Deployment**

* **DigitalOcean Droplets:** Ubuntu VPS with simple scaling options
* **AWS EC2:** Ubuntu instances with full AWS service integration
* **Google Cloud Compute Engine:** Ubuntu VMs with Google services integration
* **Linode:** Straightforward Ubuntu server hosting

**🔧 Key Configuration for Ubuntu**

Your application is already structured in a way that makes Ubuntu deployment smooth and efficient:

1. ✅ **Environment Variables** – Already using proper .env management
2. ✅ **Database** – PostgreSQL runs reliably on Ubuntu
3. ✅ **File Storage** – Cloud-ready object storage system supported
4. ✅ **Process Management** – Express server is configured for production readiness

**📋 Production Checklist for Ubuntu**

* Configure **SSL certificates** (e.g., with Let’s Encrypt)
* Set up firewall rules using **UFW**
* Establish automated backups for the PostgreSQL database
* Configure monitoring and logging tools
* Register and configure a **domain name and DNS**