

Introduction

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Welcome to *Let's Build The Internet In a Weekend*, a journey into the heart of networking where we'll create a fully virtualized Internet environment from the ground up. This isn't just another lab setup or a simple home network—this is about building a complete digital ecosystem that mirrors the complexity and functionality of real-world ISPs, all within a controlled, virtual space. Throughout this guide, you'll see how to transform a collection of virtual machines into a robust, dynamic network that can handle core services, routing, monitoring, and much more.

Why undertake a project like this? The answer is simple: hands-on experience trumps theory every time. In the real world of IT, it's not just about knowing how things should work; it's about making them work, solving problems on the fly, and integrating diverse systems into a seamless whole. This project is a bold statement that you don't need a degree or a stack of certifications to understand and build complex networks. What you need is the willingness to dig in, experiment, and learn by doing. With over 20 years of experience in rural telecom and IT infrastructure, this book distills that practical knowledge into a weekend project that will leave you with a much deeper understanding of networking fundamentals and advanced configurations.

What You'll Learn

We'll take you through every step, from setting up Proxmox to configuring core routers, managing DNS and DHCP, and implementing real-time monitoring with tools like VyOS, OPNsense, and Grafana. By the end, you'll have created multiple virtual ISPs, each with its own set of core services and routing protocols. You'll understand the basics of dynamic routing, the intricacies of managing DHCP pools for different types of clients, and how to keep an eye on the whole setup with effective monitoring tools. This isn't just theory—it's real, practical knowledge you can use to build, troubleshoot, and optimize networks in the real world.

Who This Book Is For

This book is for anyone passionate about networking, whether you're a seasoned IT professional looking to sharpen your skills or a home lab enthusiast ready to take things to the next level. It's also for those who want to bypass traditional educational routes and prove what real-world skills can accomplish. If you're the kind of person who believes in the DIY ethos of IT, then this project will resonate with you. It's for those who prefer hands-on problem solving, who aren't afraid to get

their hands dirty, and who see technology as a playground for creativity and innovation.

The Vision Behind the Project

This project is more than a technical exercise; it's a statement. It's about proving that practical, hands-on experience can accomplish what traditional paths might overlook. It's a celebration of the skills honed through years of working in the trenches of IT, managing everything from DHCP and RADIUS servers to complex routing and monitoring setups. The ecosystem you're about to build is a living demonstration of what's possible when you combine passion, knowledge, and a willingness to experiment. By documenting this process step-by-step, we're giving you not just a guide but a blueprint that you can adapt, modify, and use to build your own networks—whether at home, in a lab, or in a real-world IT environment.

Let's get started and build the internet, one virtual machine at a time.

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