

Book Review:**The Linux Enterprise Cluster**

Karl Kopper

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This book focuses on Load Balance and High Availability clustering, clearly aiming at the practitioner. It intends to help a technical user design, build and maintain clustered services from the ground up. Theory on clusters and High Availability is skimmed through or not presented at all. However, the book makes for a complete and useful manual on tools and techniques commonly used in the domain. High Performance clustering, on the other hand, falls out of scope.

Several Open Source projects are described throughout the book. As a plus, the manuscript's accuracy has been reviewed by those projects' responsables. Users, even if new to Linux, will be guided into installing and configuring every piece of software required. Several practical *recipes* are given throughout the material. However, the author seeks to enforce a good understanding of fundamentals, especially for lower level, networking issues. Special chapters deal with particular topics such as the *netfilter* package filtering machine, using *tcpdump* or adding supplementary network cards. Most of the writing effort has gone into Load Balancing, covering the Linux Virtual Server project. Monitoring is given a broad treatment, reviewing SNMP, Mon and Ganglia.

As a minor downside, the *heartbeat* package described in the book is version 1, while version 2 (with a slightly different configuration scheme but greatly improved features) was already released at publishing time. The book only makes a quick mention about DRBD, which is a replicated block device commonly used in Linux-based HA clusters.

The book contains:

- **Part I: Cluster Resources**, including Chapters 1 to 3 (*Starting Services, Handling Packets, Compiling the Kernel*).
- **Part II: High Availability**, including Chapters 4 to 9 (*Synchronizing Servers with rsync and SSH, Cloning Systems with SystemImager, Heartbeat Introduction and Theory, A Sample Heartbeat Configuration, Heartbeat Resources and Maintenance, Stonith and ipfail*).
- **Part III: Cluster Theory and Practice**, including Chapters 10 to 16 (*How to build a Linux Enterprise Cluster, The Linux Virtual Server: Introduction and Theory, The LVS-NAT Cluster, The LVS-DR Cluster, The Load Balancer, The High-Availability Cluster, The Network File System*).
- **Part IV: Maintenance and Monitoring**, including Chapters 17 to 20 (*SNMP and Mon, Ganglia, Case Studies in Cluster Administration, The Linux Cluster Environment*).
- Appendices A to F (*Downloading Software from the Internet from a Text Terminal, Troubleshooting with the tcpdump Utility, Adding Network Interface Cards to Your System, Strategies for Dependency Failures, Other Potential Cluster Filesystems and Lock Arbitration Methods, LVS Clusters and the Apache Configuration File*).

The CD-ROM included carries some High Availability and Load Balancing software, commonly found on well-known Internet sources.

Eduardo Grosclaude
oso@uncoma.edu.ar