

Tutorials and Howtos



Todo: This material has been re-organized..., but grouping should be checked: **Howtos are smaller articles** and **tutorials are more detailed document**

Welcome to Tutorials and Howtos, a place of basic and advanced configuration tasks for your Alpine Linux.

The tutorials are hands-on and the reader is expected to try and achieve the goals described in each step, possibly with the help of a good example. The output in one step is the starting point for the following step.



Howtos are smaller articles explaining how to perform a particular task with Alpine Linux, that expects a minimal knowledge from reader to perform actions.

IMPORTANT: contributions on those pages must be complete articles as well as requesting topics to be covered, don't override already made contributions. If you want to request a topic, please add your request in this page's [Discussion](#).

Howtos

Applications

Miscellaneous

- [Ansible](#) (*Configuration management*)

Monitoring

- [Awstats](#) (*Free log file analyzer*)
- [Cacti](#): traffic analysis and monitoring network (*Front-end for rrdtool networking monitor*)
- [Cvechecker](#) (*Compare installed packages for Common Vulnerabilities Exposure*)
- [Linfo](#)
- [Obtaining user information via SNMP](#) (*Using squark-auth-snmp as a Squid authentication helper*)
- [PhpSysInfo](#) (*A simple application that displays information about the host it's running on*)
- [Matomo](#) (*A real time web analytics software program*)
- [Setting up A Network Monitoring and Inventory System](#) (*Nagios + OpenAudit and related components*)

- Setting up NRPE daemon (*Performs remote Nagios checks*)
- Ntop (*NetFlow collection and analysis using a remote fprobe instance; for alpine 3.10-3.12 only*)
- Setting up lm_sensors
- SqStat (*Script to look at active squid users connections*)
- Traffic monitoring
 - Setting up monitoring using rrdtool (and rrdcollect)
 - Setting up traffic monitoring using rrdtool (and snmp)
- Zabbix - the professional complete manager (*Monitor and track the status of network services and hardware*)
- ZoneMinder video camera security and surveillance

Networking

- Alpine Wall (*a new firewall management framework*)
 - Alpine Wall
 - Alpine Wall User's Guide (<https://git.alpinelinux.org/awall/about/>)
 - How-To Alpine Wall
- Freeradius Active Directory Integration
- GNUnet
- OpenVPN server (*Allowing single users or devices to remotely connect to your network*)
- OpenVSwitch
- Using Alpine on Windows domain with IPSEC isolation
- Wireguard

Telephony

- FreePBX on Alpine Linux
- Setting up Zaptel/Asterisk on Alpine
- Kamailio (*SIP Server, formerly OpenSER*)

Backup and data migration

- Alpine local backup (lbu) (*Permanently store your modifications in case your box needs reboot*)
 - Back Up a Flash Memory Installation
 - Manually editing a existing apkovl
- Migrating data
- Rsnapshot - setting up periodic backups

Desktop

- [Daily driver guide](#)
- [Alpine and UEFI](#)
- [Default applications](#)
- Desktop cloud
 - [Nextcloud](#) (*Self hostable cloud suite - Dropbox Alternative*)
- [Desktop environments and Window managers](#) (overall information only)
- [Gaming on Alpine](#)
- [Printer Setup](#)
- [Remote Desktop Server](#)
- Sound Systems
 - [ALSA](#)
 - [PipeWire](#)
 - [PulseAudio](#)

Power management

- [Configure action when power-button is pressed](#)
- [Suspend on LID close](#)
- [Configure Wake-on-LAN](#)

Networking

- [Bluetooth](#) - Instructions for installing and configuring Bluetooth
- [Bonding](#) - Bond (or aggregate) multiple ethernet interfaces
- [Bridge](#) - Configuring a network bridge
 - [Bridge wlan0 to eth0](#)
- [Configure Networking](#)
- [How to configure static routes](#)
- Modem
 - [Using HSDPA modem](#)
 - [Using serial modem](#)
- [mDNS](#) - Howto implement multicast DNS resolution in Alpine.
- [Multi ISP](#) (*Dual-ISP setup with load-balancing and automatic failover*)
- [PXE boot](#)
- Wi-Fi
 - [Connecting to a wireless access point](#)

- [How to setup a wireless access point](#) (*Setting up Secure Wireless AP w/ WPA encryption with bridge to wired network*)
- [VLAN](#)

Other Architectures

ARM

- [Alpine on ARM](#)

Raspberry Pi

- [Raspberry Pi - Bluetooth Speaker](#)
- [Raspberry Pi - Installation](#)
- [Raspberry Pi - Router with VPN](#)
- [Raspberry Pi - Router with VPN \(IPv6\)](#)
- [Raspberry Pi - Sys mode install](#)
- [Raspberry Pi - Sys mode install - LVM on LUKS](#)
- [Raspberry Pi - Video Receiver](#) (*network video decoder using Rasperry Pi and omxplayer*)
- [Raspberry Pi 3 - Browser Client - kiosk or digital sign](#)
- [Raspberry Pi 3 - Configuring it as wireless access point -AP Mode](#)
- [Raspberry Pi 3 - Setting Up Bluetooth](#)
- [Raspberry Pi 4 - Persistent system acting as a NAS and Time Machine](#)
- [Raspberry Pi Zero W - Wireless router](#) (*Setting up a firewalled, Wireless AP with wired network on a Pi Zero W*)
- [RPI Video Receiver](#)

IBM Z (IBM z Systems)

- [s390x - Installation](#)

PowerPC

- [Powerpc64le - Installation](#)

Post-Install

- [CPU frequency scaling](#)
- [Enable Community repository](#) (*Providing additional packages*)
- [Enable Serial Console on Boot](#)
- [Init System \(OpenRC\)](#) (*Configure a service to automatically boot at next reboot*)

- [Init System - Multiple Instances of Services](#)
- [Init System - Writing Init Scripts](#)
- [Oracle Java \(installation\)](#)
- [IGMPproxy](#)
- [Package Management \(apk\)](#) *(How to add/remove packages on your Alpine)*
 - [Package Management - Comparison with other distros](#)
- [Running glibc programs](#)
- [Setting up a new user](#)
- [Upgrading Alpine](#)

Remote Administration

- [ACF](#)
 - [ACF - changing passwords](#)
 - [Generating SSL certs with ACF](#)
 - [ACF - setup](#) *(Configures ACF (webconfiguration/webmin) so you can manage your box through https)*
- [Setting up a SSH server](#) *(Using ssh is a good way to administer your box remotely)*
 - [OpenSSH 2FA](#) *(A simple two factor setup for OpenSSH)*
- [OpenVCP](#) *(VServer Control Panel)*
- [PhpMyAdmin](#) *(Web-based administration tool for MYSQL)*
- [PhpPgAdmin](#) *(Web-based administration tool for PostgreSQL)*
- [Webmin](#) *(A web-based interface for Linux system)*

Server

- [Hosting services on Alpine](#) *(Hosting mail, webservices and other services)*
- [Hosting Web/Email services on Alpine](#)

DNS

- [DNSEcrypt-Proxy](#) *Encrypt and authenticate DNS calls from your system*
- [Setting up nsd DNS server](#)
- [Setting up unbound DNS server](#)
- [TinyDNS Format](#)

HTTP

- Apache
 - Apache with php-fpm
 - Setting Up Apache with PHP
 - Apache authentication: NTLM Single Signon
- Darkhttpd
- Lighttpd
 - Lighttpd Advanced security
 - Setting Up Lighttpd With FastCGI
- Nginx
 - Nginx as reverse proxy with acme (letsencrypt)
 - Nginx with PHP
- Squid Proxy
 - Obtaining user information via SNMP (*Using squark-auth-snmp as a Squid authentication helper*)
 - Setting up Explicit Squid Proxy
 - Setting up Transparent Squid Proxy (*Covers Squid proxy and URL Filtering system*)
 - SqStat (*Script to look at active squid users connections*)
- Tomcat

Hostable Content

- DokuWiki
- Drupal (*Content Management System (CMS) written in PHP*)
- Kopano (*Microsoft Outlook compatible Groupware*)
- Mahara (*E-portfolio and social networking system*)
- MediaWiki (*Free web-based wiki software application*)
- Pastebin (*Pastebin software application*)
- WordPress (*Web software to create website or blog*)

IRC

- NgIRCd (*Server for Internet Relay Chat/IRC*)

Mail

- Exim/Dovecot
 - Small-Time Email with Exim and Dovecot (*A simple configuration for your home network.*)

- [Setting up dovecot with imap and tls](#)
- [relay email to gmail \(msmtp, mailx, sendmail\)](#)
- [Roundcube \(Webmail system\)](#)
- [Setting up postfix with virtual domains](#)
- [Server protection](#)
 - [Setting up clamsmtp](#)

Other Servers

- [apcupsd \(UPS Monitoring with apcupsd\)](#)
- [Chrony, gpsd, and a garmin LVC 18 as a Stratum 1 NTP source](#)
- [Gipi \(Manage inventory of technical resources\)](#)
- [How to setup a Alpine Linux mirror](#)
- [nfs-server](#)
- [NUT UPS \(UPS Monitoring with Network UPS Tools\)](#)
- [Odoo](#)
- [OpenLDAP \(Installing and configuring the Alpine package for OpenLDAP\)](#)
- [lldap-server \(Directory Server\)](#)
- [samba-ad-dc \(Active Directory compatible domain controller\)](#)
- [samba-server \(standard file sharing\)](#)
- [Setting up Transmission \(bittorrent\) with Clutch WebUI](#)

Software development

- [Cgit](#)
- [OsTicket \(Ticket system\)](#)
- [Patchwork \(Patch review management system\)](#)
- [Redmine \(Project management system\)](#)
- [Request Tracker \(Ticket system\)](#)
- [Trac \(Enhanced wiki and issue tracking system for software development projects\)](#)

Storage

- [Manual partitioning](#)
- [DRBD: Disk Replication](#)
- [Filesystems](#)
 - [Burning ISOs](#)
- [iSCSI Setup](#)

- [iSCSI Raid and Clustered File Systems](#)
- [iSCSI Target \(TCM\)/LinuxIO \(LIO\)](#)
- [User space iSCSI Target \(tgt\)](#)
- [LVM Setup](#)
 - [LVM on GPT-labeled disks](#)
 - [LVM on GPT-labeled disks \(updated\)](#)
 - [LVM on LUKS](#)
- [RAID](#)
 - [Raid Administration](#)
 - [Setting up a software RAID array](#)
- [ZFS](#)
 - [Root on ZFS with native encryption](#)
 - [Setting up ZFS on LUKS](#)
 - [Setting up ZFS with native encryption](#)
 - [ZFS scrub and trim](#)
- [CEPH](#)

Virtualization

- [Docker](#)
- [Installing Alpine in a virtual machine](#)
 - [Install Alpine on VMware ESXi](#)
- [KVM \(Setting up Alpine as a KVM hypervisor\)](#)
- [LXC \(Setting up a Linux container in Alpine Linux\)](#)
- [QEMU](#)
- [Xen](#)
 - [Xen Dom0 \(Setting up Alpine as a dom0 for Xen hypervisor\)](#)
 - [Xen Dom0 on USB or SD](#)
 - [Xen DomU \(paravirtualized\)](#)
 - [Xen LiveCD](#)
 - [Xen PCI Passthrough](#)

Tutorials

Miscellaneous

- [TTY Autologin](#)

- [Faster rebooting with kexec](#)
- [Dynamic Multipoint VPN \(DMVPN\) combined with Small Office Services](#)
- [DIY Fully working Alpine Linux for Allwinner and Other ARM SOCs](#)
- [Fault Tolerant Routing with Alpine Linux](#)
- [High Availability High Performance Web Cache \(*uCarp + HAProxy for High Availability Services such as Squid web proxy*\)](#)
- [Linux iSCSI Target \(TCM\)](#)
- [ISP Mail Server 3.x HowTo\] \(*Postfix+PostfixAdmin+DoveCot+Roundcube+ClamAV+Spamd - A full-service ISP mail server*\)](#)
- [Replacing non-Alpine Linux with Alpine remotely](#)
- [Setting up A Network Monitoring and Inventory System \(*Nagios + OpenAudit and related components*\)](#)
- [Streaming Security Camera Video with VLC](#)
- [Install Alpine on a btrfs filesystem with refind as boot manager](#)

Newbie corner

- [How to get regular stuff working *some notes on need-to-know topics*](#)

Servers

- [Alpine production deploy](#)
 - [Production web server: Lighttpd](#)
 - [Production database: MySQL](#)
 - [Production LAMP system: Lighttpd + PHP + MySQL](#)
- [Alpine production monitoring](#)
 - [Cacti: traffic analysis and monitoring network](#)
 - [Zabbix - the professional complete manager](#)
- [Kubernetes](#)
 - [K8s Building a K8s Cluster on Alpine Linux](#)

Security

- [Securing Alpine Linux How to Secure Alpine Linux using Security Technical Implementation Guides \(STIGs\)](#)
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