

Introduction to Linux for SQL Server and Windows Professionals

Additional Materials

This document will contain information and links I have found interesting while working with SQL Server on Linux and Linux in general. Some of this information was originally part of the SQL Saturday presentation but has been removed due to time constraints and relevance. Please feel free to contact me using any of the contact methods at the end of this document with questions or suggestions to add to this living document.

What is Linux?

Linux is an operating system much like Windows and MacOS X. An operating system is the software that supports the major functions of computer operation such as scheduling tasks, running applications, and interfacing with peripherals such as printers, speakers, internal disk drives, graphics cards, USB drives, and other hardware.

What is a Distribution?

For an operating system to legitimately be called Linux it must contain the Linux Kernel code as released through [The Linux Kernel Archives](#). Creators of Linux distribution packages (or distros) are free to include any additional software and hardware support as long as the basic kernel is included. Popular free distributions are CentOS, Fedora, OpenSUSE, Debian, and Ubuntu. Commercial versions, including support, are available from Red Hat, SUSE, and Canonical. A list of most available distributions can be found [here](#).

What is cron and why would I use it?

cron is the Linux daemon (similar to a Windows service) that controls scheduled tasks. It is analogous to the Windows task scheduler. cron can be setup at a system wide level or for a user depending on needs.

Task scheduling using cron

A task scheduled via cron is added to a special file named crontab. Entries in crontab have a specific format:

mm hh dd MM dow <command to execute>

- mm – the minute at which the task is to execute. (0-59)
- hh – the hour at which the task is to execute (0-23)
- dd – the day of the month the task is to execute (1-31)
- MM – the numeric month the task should run (1-12)
- dow – indicates if the task should only run on a specific day of the week. Valid values are 0-6 with 0 being Sunday.
- Note: * in any position indicates all values for that position are allowed.

Tuning Linux

Just like other operating systems, it is necessary, from time to time, to tune the system to make sure it is performing at peak efficiency. There are many built-in commands/tools available for this task. A few are listed here:

- ps – list running processes (point in time)
- top – display running process (real time)

- kill – kill a running process (be careful)
- iostat – CPU and IO statistics
- sar – collect, report, save system activity information
- pidstat – statistics for Linux tasks
- mpstat – statistics for each running processor
- vmstat – virtual memory statistics
- cifsioat – CIFS statistics (if in use)

Additional topics of interest

The following links are for topics that don't fit in the introduction level but may be of interest to some.

- [High Availability - RedHat Specific](#)
- [SQL Server Agent](#)
- [SQL Server Full-Text Search](#)
- [Active Directory Integration](#)
- [SQL Server Integration Services](#)
- [Azure Data Studio \(formerly SQL Operations Studio\)](#)
- [Command-line client with syntax highlighting \(mssql-cli\)](#)
- [Visual Studio Code](#)

Other commands you may find useful of fun

- If using the Ubuntu Desktop, there is a nice Notepad++ clone available
 - `sudo add-apt-repository ppa:notepadqq-team/notepadqq`
 - `sudo apt-get update`
 - `sudo apt-get install notepadqq`
- Some interesting Linux commands you may or not normally use in DOS
 - `cal` – display calendar for current or specific month
 - `date` – display system date and time
 - `df` – show disk space free
 - `free` – displays memory usage
 - `netstat` – network usage info
 - `sort/uniq` – sort text files and (alternatively) remove duplicate lines
 - `tac` – same as `cat` but in reverse order
 - `touch` – create a new file or change the date/time stamp of existing
 - `wc` – produce count of words, lines, and characters in a file

Online Resources

The following links give more information on many topics related to Linux, SQL Server, and other topics of interest.

- [Video Recording of SQL Sat Houston Presentation](#)
- Microsoft Docs
 - [SQL Server on Linux](#)
 - [Performance Best Practices](#)
 - [Quick Start Guide - Registration Required](#)
- Adventure Works Database
 - [AdventureWorks sample databases - All Versions](#)
- Pluralsight
 - Anthony Nocentino
 - SQL Server on Linux Administration Fundamentals
 - Play by Play: Microsoft Open Source PowerShell on Linux and Mac
- Amazon Kindle
 - [Linux for Beginners](#)
 - [Linux Administration](#)
 - [Command Line Kung Fu](#)
 - [Shell Scripting](#)

- [Python Programming for Beginners](#)
- [Pro SQL Server on Linux](#)
- Free eBooks for Noobs and Admins
 - [10 Useful Free Linux eBooks for Newbies and Administrators](#)
- More free books at GoalKicker
 - [Bash](#)
 - [Git](#)
 - [Linux](#)
 - [Perl](#)
 - [PowerShell](#)
 - [Python](#)
 - [R](#)
 - [SQL](#)
- [We Speak Linux](#) (currently on break, look for return later this year)
- [BAT - cat clone with syntax highlighting and Git integration](#)
- [Install zsh](#)
- [Linux Cheat Sheet](#)