

# The KSysV Handbook

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### **Abstract**

KSysV is a graphical editor for the SysV style init configuration.

# Chapter 1

## Introduction

Welcome to the KDE System V Init Editor, commonly known (and hereafter referenced) as KSysV. This section introduces a few concepts and explains what you can do with KSysV.

## Chapter 2

# A Brief Description of System V Init

The following explanation is 'borrowed' from `tksysv` (an inspiration for KSysV):

System V init is fast becoming the standard in the Linux® world to control the startup of software at boot time. This is because it is arguably easier to use and more powerful and flexible than the traditional BSD init.

I won't go into the history here (mainly because I don't know it :-).

The `init` binary is located in `/sbin` and not `/etc`. This is important as one might try and upgrade a machine to System V init without re-installing and reformatting. The Linux® kernel looks in `/etc` for its `init` first, so you must make sure and delete your old `init` from there if any.

SysV init also differs from BSD init in that the config files are in a subfolder of `/etc` instead of residing directly in `/etc`. This folder is called `rc.d`. In there you will find `rc.sysinit` and the following folders:

- `init.d/`
- `rc0.d/`
- `rc1.d/`
- `rc2.d/`
- `rc3.d/`
- `rc4.d/`
- `rc5.d/`
- `rc6.d`

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`init.d` contains a bunch of scripts. Basically, you need one script for each service you may need to start at boot time or when entering another runlevel. Services include things like networking, NFS, sendmail®, httpd, etc.. Services do not include things like `setserial` that must only be run once and then exited. Things like that should go in the file `rc.local`.

`rc.local` should be in `/etc/rc.d` if you want one. Most systems include one even though it doesn't do much. You can also include an `rc.serial` in `/etc/rc.d` if you need to do serial port specific things at boot time.

The chain of events is as follows:

1. The kernel looks in several places for `init` and runs the first one it finds.
2. `init` runs `/etc/rc.d/rc.sysinit`.
3. `rc.sysinit` does a bunch of necessary things and then runs `rc.serial` (if it exists)
4. `init` runs `rc.local`
5. `init` runs all the scripts for the default runlevel

The default runlevel is decided in `/etc/inittab`. You should have a line close to the top like:

```
id:3:initdefault:
```

From this, you'd look in the second column and see that the default runlevel is 3, as should be the case for most systems. If you want to change it, you can edit `/etc/inittab` by hand and change the 3. Be very careful when you are messing with the `inittab`. If you do mess up, you can get in to fix it by rebooting and doing:

```
LILO boot: linux single
```

This *should* allow you to boot into single user mode so you can fix it.

Now, how does it run all the right scripts? If you do an `ls -l` on `rc3.d`, you might see something like:

```
lrwxrwxrwx 1 root root 13 13:11 S10network -> ../init.d/ ↔  
network  
lrwxrwxrwx 1 root root 16 13:11 S30syslog -> ../init.d/syslog  
lrwxrwxrwx 1 root root 14 13:32 S40cron -> ../init.d/cron  
lrwxrwxrwx 1 root root 14 13:11 S50inet -> ../init.d/inet  
lrwxrwxrwx 1 root root 13 13:11 S60nfs -> ../init.d/nfs  
lrwxrwxrwx 1 root root 15 13:11 S70nfsfs -> ../init.d/nfsfs  
lrwxrwxrwx 1 root root 18 13:11 S75keytable -> ../init.d/ ↔  
keytable  
lrwxrwxrwx 1 root root 23 13:11 S80sendmail -> ../init.d/ ↔  
sendmail.init  
lrwxrwxrwx 1 root root 18 13:11 S90lpd -> ../init.d/lpd.init  
lrwxrwxrwx 1 root root 11 13:11 S99local -> ../rc.local
```

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What you'll notice is that there are no real files in the folder. Everything there is a link to one of the scripts in the `init.d` folder.

The links also have an `S` and a number at the beginning. The `S` means to start this particular script and a `K` would mean to stop it. The number is just there for ordering purposes. Init will start all the services based on the order they appear. You can duplicate numbers, but it will only confuse you somewhat. You just need to use a two digit number only, along with an uppercase `S` or `K` to start or stop the services you need to.

How does it start and stop services? Simple. Each of the scripts is written to accept an argument which can be `start` and `stop`. You can execute those scripts by hand in fact with a command like:

```
/etc/rc.d/init.d/httpd.init stop
```

To stop the `httpd` server. Init just reads the name and if it has a `K`, it calls the script with the `stop` argument. If it has an `S` it calls the script with a `start` argument.

### 2.1 Why All These Runlevels ?

Some people want an easy way to setup machines to be multi-purpose. I could have a 'server' runlevel that just runs `httpd`, `sendmail`®, `networking`, etc. Then I could have a 'user' runlevel that runs `kdm`, `networking`, etc.

## Chapter 3

# Onscreen Fundamentals

Here you learn how to use KSysV, which shouldn't be hard since it was designed to be as user-friendly as possible.

### 3.1 Mouse

Using KSysV with a mouse or other pointing device is easy: just drag an entry from the Available Services area onto one of the six runlevels to start (or resp. stop) it in that runlevel.

You can also move scripts between runlevels, or change the position in a given runlevel, by dragging it around. Doing so removes the entry from its original runlevel (or position). This doesn't happen when you drag an entry from the Available Services area.

#### NOTE

Entries are moved when you drag them to a new area. To copy a service to a different runlevel, you have to select Copy from the Edit or context menu and Paste it in the target runlevel.

The 'sorting number' of an entry sometimes cannot be calculated. In such a case you have to edit the sorting numbers of surrounding entries before re-trying to insert the service.

#### NOTE

Sorting numbers can range from 00 to 99, but no higher.

You can delete entries by dragging them onto the Trash Can area (symbolized by an icon depicting a garbage bin).

**WARNING**

Currently there is *no* way to recover items dragged onto the Trash Can, so be careful!

## 3.2 Keyboard

You can use the **Tab** key to switch focus between different panels (Available Services, Runlevel 1 Start, Runlevel 1 Stop, etc.) and the cursor keys to move the selection up and down.

To move an entry to a different runlevel, Cut it to the clipboard (using Ctrl+X and Paste it in the target runlevel (with Ctrl+V).

To manually change an entries sorting number or name, press **Enter** to open the properties dialog. Use the **Tab** key to switch between different fields. Close the dialog by pressing **Enter** to accept the modifications, or press **Esc** to cancel any changes.

## 3.3 The Menu Entries

A one by one description of KSysV's menu.

### 3.3.1 The File menu

Because of the danger of data loss, all menu entries under File ask for confirmation before doing their work.

**File** → **Revert Configuration...** Forget any changes you have made, and revert to the last saved configuration.

**File** → **Open... (Ctrl+O)** Open a previously saved configuration.

**File** → **Save Configuration (Ctrl+S)** Make your changes permanent. Saving does not generate any backup files, so use with care.

**File** → **Save As...** Save a copy of your new configuration.

**File** → **Save Log... (Ctrl+L)** Save a log

**File** → **Print Log... (Ctrl+P)** Print a copy of the log.

**File** → **Quit (Ctrl+Q)** Quit KSysV.

### 3.3.2 The Edit menu

**Edit** → **Undo (Ctrl+Z)** Undo the last unsaved change made.

**Edit** → **Redo (Ctrl+Shift+Z)** Redo the last item undone.

**Edit** → **Cut (Ctrl+X)** Cut the currently selected service to the clipboard.

**Edit** → **Copy (Ctrl+C)** Copy the selected entry to the clipboard, without removing it from its original position.

**Edit** → **Paste (Ctrl+V)** Paste the content of the clipboard at the current cursor position.

**Edit** → **Properties** Open the properties dialog for the selected item.

### 3.3.3 The Tools menu

**Tools** → **Start Service...** Start the selected service

**Tools** → **Stop Service...** Stop the selected service

**Tools** → **Restart Service...** Restart the selected service.

**Tools** → **Edit Service...** Edit the selected service

### 3.3.4 The Settings menu

**Settings** → **Show Toolbar** Toggle on and off display of the toolbar.

**Settings** → **Show Statusbar** Toggle on and off display of the statusbar.

**Settings** → **Show Log** Toggle on and off the display of the log window

**Settings** → **Save Settings** Save your current settings.

**Settings** → **Configure Key bindings...** Customize the default keybindings.

**Settings** → **Configure Toolbars...** Customize the toolbar.

**Settings** → **Configure SysV-Init Editor...** Customize the behavior of KSysV

### 3.3.5 The Help menu

- Help** → **KSysV Handbook (F1)** Invokes the KDE Help system starting at the KSysV help pages. (this document).
- Help** → **What's This? (Shift+F1)** Changes the mouse cursor to a combination arrow and question mark. Clicking on items within KSysV will open a help window (if one exists for the particular item) explaining the item's function.
- Help** → **Report Bug...** Opens the Bug report dialog where you can report a bug or request a 'wishlist' feature.
- Help** → **Switch Application Language...** Opens a dialog where you can edit the Primary language and Fallback language for this application.
- Help** → **About KSysV** This will display version and author information.
- Help** → **About KDE** This displays the KDE version and other basic information.

# Chapter 4

## Configuration

All options are saved in `$KDEHOME/share/config/ksysvrc`. Defaults are taken from the global file (`$KDEDIR/share/config/ksysvrc`), if available, or else generated within KSysV. Changes to the defaults are stored in your local `ksysvrc`.

### 4.1 Recognized Sections

Recognized sections and keys plus their default values.

#### 4.1.1 [Path Settings]

*Keyword:* ScriptPath, *Default:* `/etc/rc.d/init.d`, *Description:* Path to the scripts used for starting and stopping services.

*Keyword:* RunlevelPath, *Default:* `/etc/rc.d`, *Description:* Path to the runlevel subfolders.

#### 4.1.2 [Colors]

*Keyword:* Changed, *Default:* red, *Description:* Color used for changed entries

*Keyword:* New, *Default:* blue, *Description:* Color used for new entries

#### 4.1.3 [Geometry]

*Keyword:* Width, *Default:* , *Description:* Width of KSysV's window

*Keyword:* Height, *Default:* , *Description:* Height of KSysV's

#### 4.1.4 [Other Settings]

*Keyword: ToolBar, Default: true, Description: If the toolbar is enabled or not*

*Keyword: StatusBar, Default: true, Description: If the status bar is enabled or not*

*Keyword: ShowLog, Default: true, Description: If the log window is shown or not*

*Keyword: PanningFactor, Default: 80, Description:  $100 - \text{PanningFactor} =$  percentage of window reserved for the logfile display*

## Chapter 5

# Questions and Answers

1. *I played around with the default runlevel, and now my machine reboots all the time. What can I do?*

Enter `linux single` at the LILO prompt, and press **Enter** to boot into single user mode. Edit the file `/etc/inittab` and change to the default runlevel to something sane. 3 should normally be safe.

2. *My Machine 'halts' just after booting*

See Question 1, above.

3. *I scheduled some services to be run in runlevel X using KSysV, so why aren't they working?*

If you're using SuSE® or Delix (DLD) distributions, you also have to edit a distribution specific file in `/etc`. Please have a look at the manual of your distribution for details.

### NOTE

The approach to starting services used by the above mentioned distributions makes configuration of services easy for the proprietary configuration tools these distributions provide, but it is unfortunately non-standard. The KSysV authors plan to write a generic extension for this approach some time in the future, but don't hold your breath.

If you're using a different distribution, please check you have all the config files needed by the service, and whether they are in the correct locations. Some daemons for example Apache, (aka **httpd**) just die silently if their configuration files are missing or misconfigured.

## Chapter 6

# Standard semantics of Runlevels

These vary by distribution, so this is an incomplete list of the most common Linux® distributions. If you have additional distributions, please email the author and have the information added to this manual.

### Red Hat®

**Runlevel 0:** halt (shuts down the machine)

**Runlevel 1:** Single user mode.

**Runlevel 2:** Multi user text only, without NFS.

**Runlevel 3:** Multi user text-only, with full networking.

**Runlevel 4:** Not used.

**Runlevel 5:** Multi user X11 with full networking.

**Runlevel 6:** Reboot

## Chapter 7

# License and Credits

KSysV Copyright (c) 1997-1998 Peter Putzer

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## Appendix A

# Installation

KSysV is part of the KDE project <http://www.kde.org/> .

KSysV can be found in the kadmin package on <ftp://ftp.kde.org/pub/kde/> , the main FTP site of the KDE project.

For detailed information on how to compile and install KDE applications see [Building KDE4 From Source](#)

Since KDE uses **cmake** you should have no trouble compiling it. Should you run into problems please report them to the KDE mailing lists.