Scientific Linux 6.

What's new. What's not.
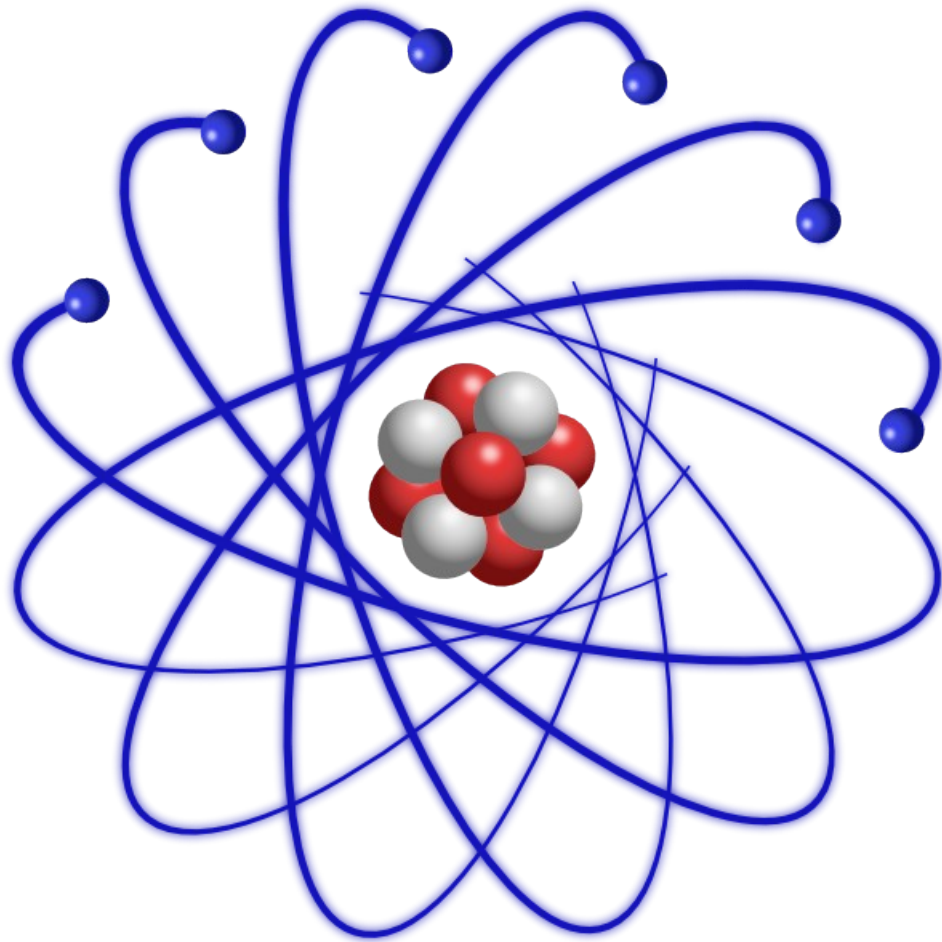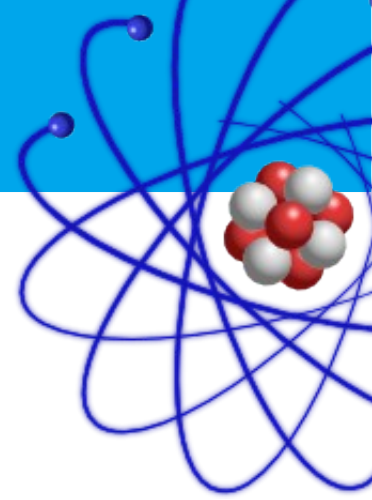
Stephan Wiesand
Linux Users Meeting
Hamburg, 2012-04-13

HELMHOLTZ
| GEMEINSCHAFT

DESY

Outline

> Recap: RHEL / SL

> What's new with SL6?

- for users

- under the hood
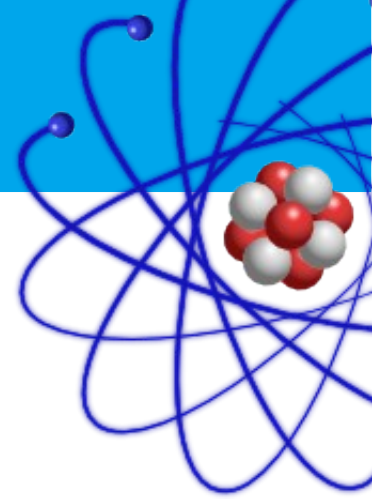
Reminder: Scientific Linux

> **Rebuild** of the free sources of Red Hat Enterprise Linux

- As far as they're available in a public place
  - > ftp.redhat.com
  - > This is not true for several RHEL add-ons
    - Extended Update Support
      - > Security patches for previous minor releases (now called "service packs")
        - backported
      - > SL adds such support for all minor releases
        - but security fixes always come from the latest minor release
          - > no backports
    - Extended Life cycle Support

> SL is supposed to be binary compatible with RHEL

> Creating such a clone is not trivial, and a lot of work

- FNAL doing a very good job – Thanks!

> Other choices for RHEL clones:

- CentOS, SLC, PUIAS (all free); OEL (fee)

RHEL Life Cycle – before 2012-01-31
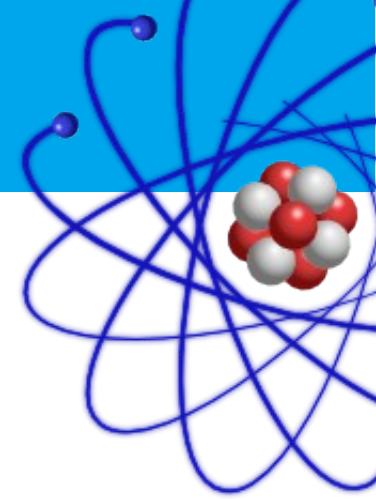
1	2	3	4	5	6	7	8	9	10
Production 1				2	3		ELS		

> "Production" phases

   ■ 1: Minor releases (every 6-8 months)

      > Bug fixes, enhancements (new software, new versions)

      > Support for new hardware

   ■ 2: Minor releases

      > Bug fixes

      > Limited support for new hardware

   ■ 3: Security and other critical bug fixes

      > Support for running as VM under current major release

> Extended Life Cycle phase

   ■ Like production 3, for an additional fee

RHEL Life Cycle – as of 2012-01-31 (EL5+ only)

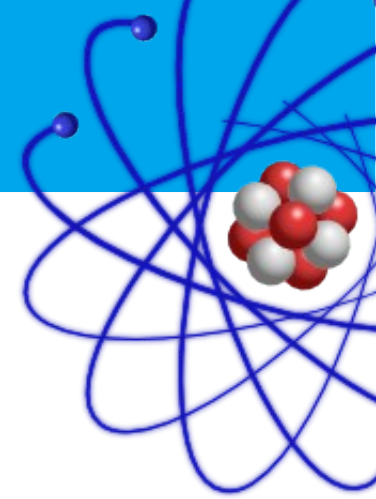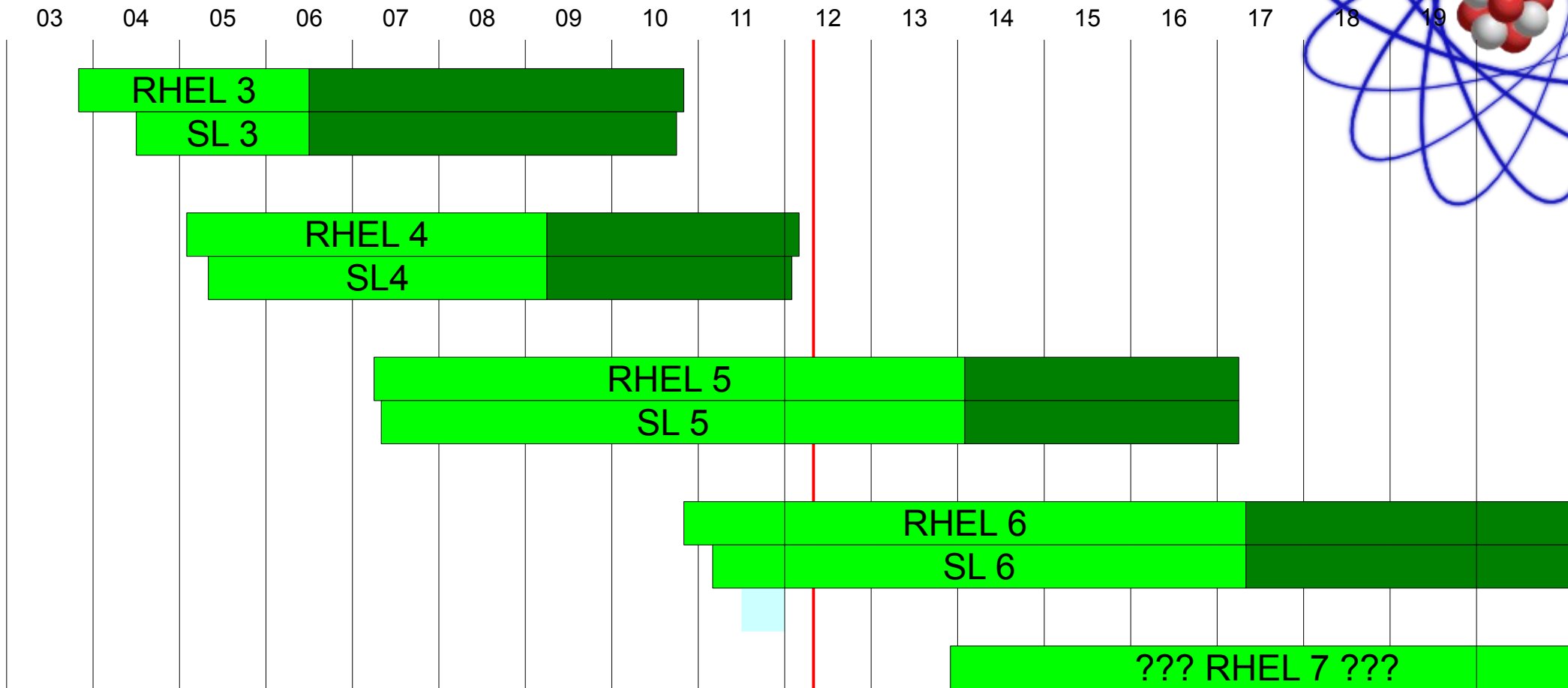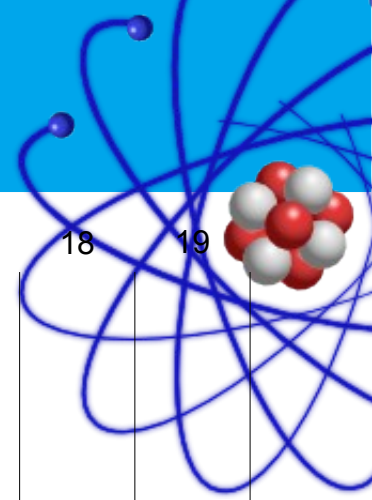| 1	2	3	4	5			8	9	10	11	12	13
Production 1						2		3			ELS	

> "Production" phases

- 1: Minor releases (every 6-8 months)
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    - > Support for new hardware
- 2: Minor releases
    - > Bug fixes
    - > Limited support for new hardware
- 3: Security and other critical bug fixes
    - > Support for running as VM under current major release
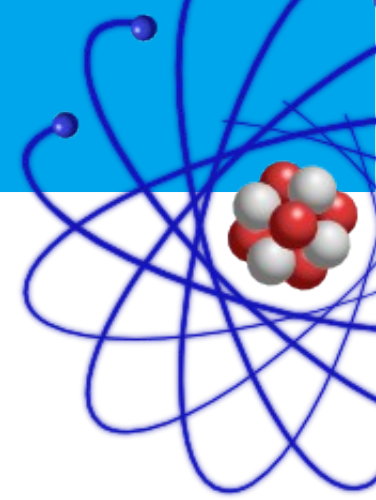
> Extended Life Cycle phase

- Like production 3, for an additional fee

Timeline

03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19

RHEL 3
SL 3

RHEL 4
SL4

RHEL 5
SL 5

RHEL 6
SL 6

??? RHEL 7 ???

General Changes in SL6

> Reduced number of add-ons w.r.t. RHEL6

- especially those available from 3rd party repositories
  > EPEL
  - policy not to interfere with base distribution
  > ELRepo
  - anything involving kernel modules
  - also provide "mainline" kernels
  > rpmforge, atrpms, …

> Point releases no longer add all updates available at time of SL release

> "Sites" replaced with standard tools to create "Spins"

> => Much closer to upstream

- and to other clones

Under the Hood
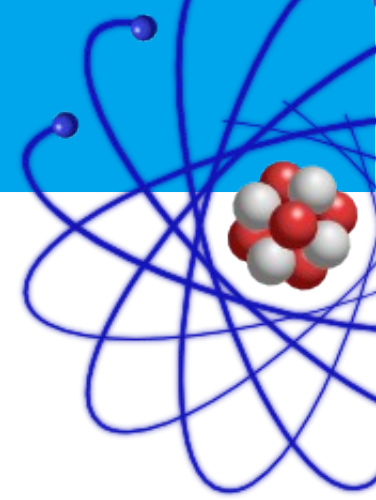
> **Control groups**

  ▪ can help with QOS

    > virtualization

    > batch?

    > wgs?

> **Virtualization: Xen → KVM**

  ▪ same kernel on host and VMs; VM is just a process

  ▪ SPICE: towards "virtual desktops"

  ▪ SL6 can run as Xen PV VM on SL5 Xen hosts

> **Deep C states support on Intel CPUs (Nehalem+)**

  ▪ significant power savings especially on (partially) idle systems

    > idle M610 with Nehalem CPUs: -25%

  ▪ problems with Nehalem & early kernels seem solved

Kernel ABI
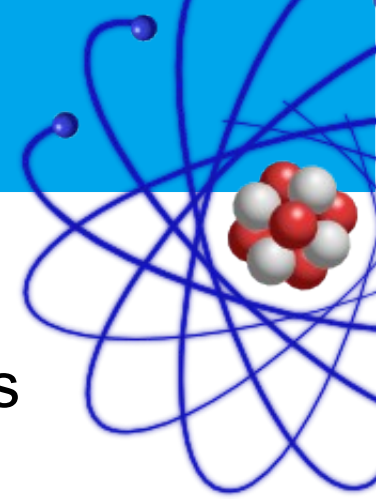
> RHEL has supported "kABI" for a while now

> signatures of "internal" functions used by drivers/modules

- can be used as RPM dependencies

> whitelist of symbols not to be touched by RH developers

> kernel modules needn't be rebuilt for new kernels

- if no part of the ABI in use changed

  > guaranteed for symbols on the whitelist

- "weak updates" mechanism makes old module available with new kernel

> SL5: only the whitelisted part of the ABI is published

> SL6: the complete ABI is published

- making it safe to use weak updates with symbols not whitelisted

OpenAFS
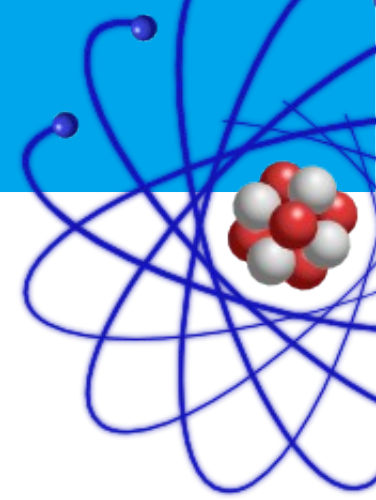
> SL6 ships next major release: 1.6

- kernel module makes use of weak updates

  > uses many functions not whitelisted

  > but used ABI is untouched since 6.0 GA

  > rpm dependencies should prevent accidents

> early 1.6 (pre-)releases still had a number of serious bugs

> it's a very good idea to update at least to the packages coming with SL 6.1

- NAT ping flood bug, causing trouble for servers over time

> it's also a good idea to test the 1.6.1 packages in 6rolling/testing

> don't run servers with any 1.6 release < 1.6.1

> server & client now covered by SELinux targeted policy

- server policy is incomplete – make sure they run unconfined

What's New for Users
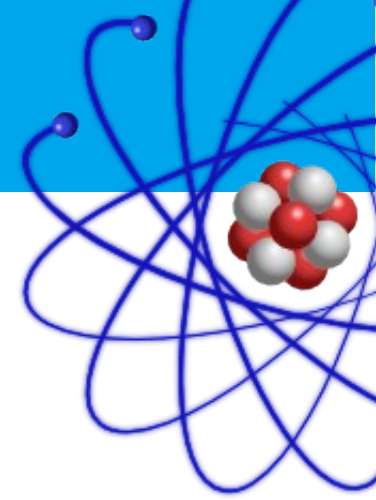
> (Few to) No spectacular changes

> GNOME looks & feels very much the same as on SL5

> Firefox *is* the same version as on SL5

> But improvements all over the place - examples:

- evince works much better
  - > This helps avoiding Adobe Reader
    - Critical issues, being exploited in the wild
    - unfixed for weeks/months on Linux systems
- ancient tetex replaced with texlive
- many additional software packages
  - > often in the "optional" channel (limited support/attention)
- Expect performance to improve by a few % on average
- AFS client should be much faster at least for cached data

Remark: Firefox / Thunderbird Releases
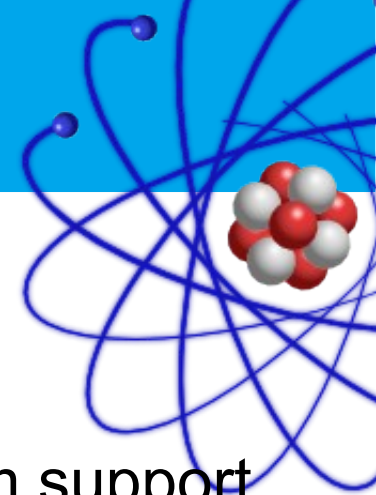
> recent update 3 → 10

- seems to have caused some confusion

> firefox/thunderbird 3.6 was the last release with long term support

- bug & security fixes only
- support ends in April

> feature releases from mozilla.org now every 6 weeks

- unsuitable for enterprise use
- after some discussion, they now provide "Extended Support Releases"

> the current ESR is 10.0.x

> the next one will be 17.0.x (early 2013)

- followed by 24.0.x (late 2013) ...

> see http://www.mozilla.org/en-US/firefox/organizations/faq

SL5/6 software compatibility
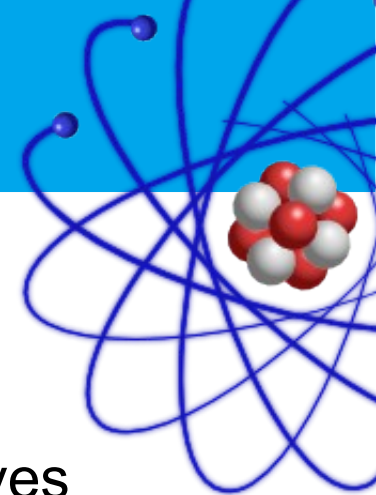
> **Binary**: Software built for SL5 *should* work on SL6

- All available compat-* packages are installed

- If some are missing, we try to create and add them ourselves

  > This was recently done for mysql

> **Source**: GCC

- SL5: 4.1 default, also available:

  > gcc44, g++44, gfortran44

  > gcc34, g++34, g77

- SL6: 4.4 default, also available:

  > gcc34, g++34, g77

  > no gcc41

- 4.4 is meant to be the link

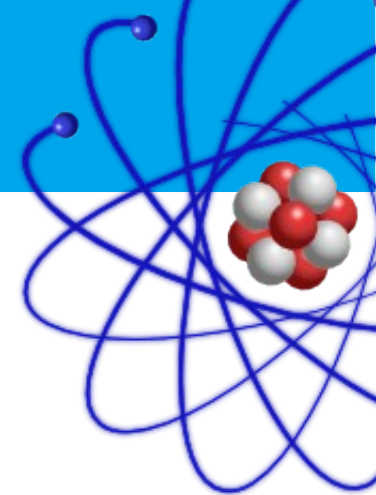# Beware of kernel bug

> affects all SL6 systems that

  - run kernels < 2.6.32-220.4.2.el6

  - use TSC as clock source

> systems will crash after 208 days of uptime
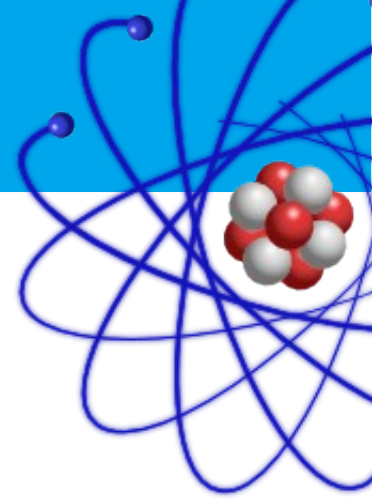
Summary

> RHEL clone is still a good choice for Linux@DESY

- now 10 years of support life

  > alas, release schedule still completely arbitrary

> SL is still a good choice of clone

- several solid alternatives exist, if ever needed

> SL6 user experience is evolution, not revolution

- more & updated software

- better performance with lower power consumption

- advanced kernel features yet to be exploited

> Just get rid of early SL6 kernels & AFS clients