




Linux on Z Maintenance

HowTo for x86 Penguins and Chameleons



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Agenda

- About me
- Mainframes
- openSUSE zSystems
- s390x in OBS
- openSUSE contacts
- Bugzilla Entries
- Easy bug fixes
- Byte Order
- The Linux Distributions Working Group
- The Open Mainframe Project
- LinuxONE (OSS) Community Cloud



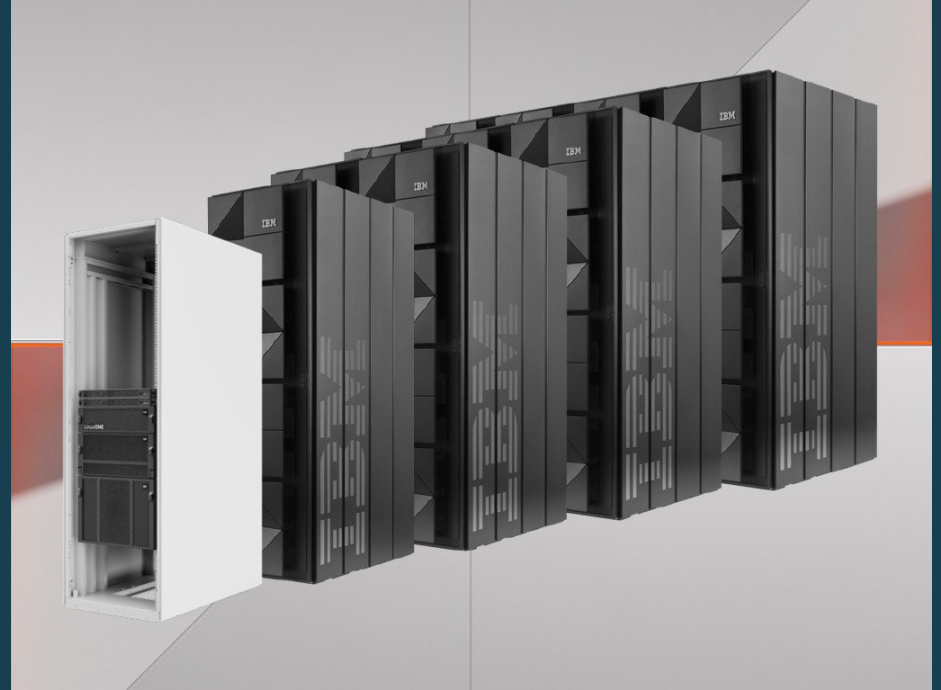
About me

- Computer Science Expert – System Integration (IHK)
- Linux Systems Administrator
- Systems Engineer
- Bachelor Studies in Computer Science, TH Nürnberg
- Lead AG Open Source
- Bachelor Thesis at IBM
- Senior Consultant, IT Development Lead
- Mainframe Architect Open Source (Kyndryl)
- Focus on Mainframes, Multi Cloud/Platform and Kubernetes
- Master Computer Science, Information Systems (part-time)
- First tasks in wiki translations and software translations
- Creation of bug reports
- Attending conferences (booths, presentations)
- Global Coordinator Translations
- Founder of the Heroes Team (Infrastructure)
- 2 years openSUSE Board Member
- Support of the Release Engineering Team
- Teamlead openSUSE zSystems
- openSUSE Release Engineer for s390x
- (Co-) Chair Linux Distributions Working Group @The Open Mainframe Project



The Mainframe

- “Large” high-performance computer systems
- Now also available in a smaller version
- Big Endian Systems
- Architecture s390x
- Used for mission-critical data
- Mostly used for banking, insurances,...
- Benefit: Many transactions in parallel
- Thousands of VMs can run on such a system



openSUSE zSystems

- s390x Port by openSUSE (openSUSE Tumbleweed & Leap)
- Established by Berthold Gunreben
- Team with around 5 people
- Bi-weekly meetings (second Thursday 19:00 German time)
- 1 Team BBQ Party every year :-)
- 7 VMs in the LinuxONE OSS Community Cloud for Team Members
- OBS: <https://build.opensuse.org/project/show/openSUSE:Factory:zSystems>
- Wiki: <https://en.opensuse.org/ZSystems>
- Meetings: <https://meet.opensuse.org/s390x>



openSUSE zSystems in OBS

- Own (Port) Project in OBS: <https://build.opensuse.org/project/show/openSUSE:Factory:zSystems>

The screenshot displays the OBS project page for `openSUSE:Factory:zSystems`. The left sidebar contains navigation options: Build Service, Places (All Projects, Status Monitor), and Actions on this page (Report Bug). The main content area shows a table of build artifacts:

Artifact Name	Age
alertmanager-image	almost 2 years ago
apache-tomcat-10-image	9 months ago
apache-tomcat-9-image	9 months ago
base-flips-image	7 months ago
bci-ci-image	6 days ago
bind-image	3 months ago
blackbox_exporter-image	almost 2 years ago
busybox-image	almost 3 years ago
butane-image	almost 4 years ago
cdi-apiserver-container	almost 4 years ago
cdi-cloner-container	almost 4 years ago
cdi-controller-container	almost 4 years ago
cdi-importer-container	almost 4 years ago
cdi-operator-container	almost 4 years ago
cdi-uploadproxy-container	almost 4 years ago
cdi-uploadserver-container	almost 4 years ago
ceph-image	over 5 years ago
cosign-image	8 months ago
cups-image	almost 3 years ago

Navigation: page 1 of 7 (154 records) | First | Previous | Next | Last

Comments: 2

The right sidebar shows build statistics for different architectures:

- images**
 - local: succeeded: 1, blocked: 4, disabled: 1, excluded: 17603
 - s390x: succeeded: 51, failed: 3, unresolvable: 1, blocked: 8, building: 1, disabled: 1, excluded: 17544
- standard**
 - s390x: succeeded: 15783, failed: 217, unresolvable: 460, blocked: 2, building: 3, disabled: 1, excluded: 1143
 - x86_64: disabled: 17607, excluded: 2



Contacts

- openSUSE zSystems Mailing List:

<https://lists.opensuse.org/manage/lists/zsystems.lists.opensuse.org/>

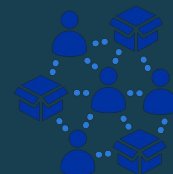
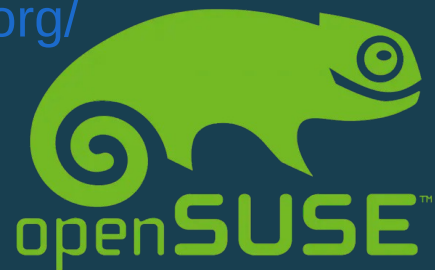
- If openSUSE zSystems subscribed:

zsystems@lists.opensuse.org

- Are all Linux Distributions affected (upstream problem)?

<https://lists.openmainframeproject.org/g/wg-linux-distros>

→ IBM involved to fix the problem



OPEN MAINFRAME PROJECT

**Linux
Distributions**

Working Group



Bugzilla Entry

- Choose S/390x 64 Bit
- Add myself to the Watchers: ada.lovelace@gmx.de (I get informed) → alternatively perhaps later

Bugzilla - Enter Bug: openSUSE Tumbleweed

Home New Browse Search Search [?] Reports [ada.lovelace@gmx.de](#) My Saved Searches ▾

Before reporting a bug, please read the [bug writing guidelines](#), please look at the list of [most frequently reported bugs](#), and please search for the bug.

Show Advanced Fields (* = Required Field)

* Product: openSUSE Tumbleweed Reporter: ada.lovelace@gmx.de

* Component: Apache
AppArmor
AutoYaST
Basesystem
Bootloader
Cloud:Images
Cloud:Tools
Component Description: Select a component to read its description.

* Version: Current Severity: Normal
Slowroll Hardware: S/390-64
OS: Other

* Summary:

Description:

Attachment:



My Email Addresses (at openSUSE)

- sarah.kriesch@ibm.com
- sarah.kriesch@opensuse.org
- AdaLovelace@opensuse.org
- ada.lovelace@gmx.de
- Sarah.julia.kriesch@kyndryl.com



Adding s390x Builds to home project

The screenshot shows the Build Service interface for the 'coredns' package. The left sidebar contains navigation options: 'Places' (Your Requests, Your Home Project), 'Actions on this page' (Report Bug, Branch Package, Submit Package, Request Role Addition, Request Deletion, Report Package), and 'All Projects' (Status Monitor). A green arrow points to the 'Branch Package' option. The main content area shows the 'Overview' tab for 'coredns', with a 'Watch' button and a list of actions: 'Devel package for openSUSE:Factory', '1 derived packages', 'Links to openSUSE:Factory / coredns', 'Download package', 'Checkout Package', and 'Create Badge'. Below this is a 'Source Files' table with columns for 'Filename', 'Size', 'Changed', and 'Actions'. The table lists two files: '_service' (534 Bytes, 3 months ago) and '_servicedata' (232 Bytes, 3 months ago). To the right, there is a 'Build Results' section with a 'Refresh' button and a link to 'Show 3 excluded/disabled results'.

Filename	Size	Changed	Actions
_service	534 Bytes	3 months ago	📄 📄
_servicedata	232 Bytes	3 months ago	📄 📄



Adding s390x Builds to home project

Build Service

Search

Watchlist Notifications

Hey there! Content Moderation is getting more user-friendly! Wanna know more? Checkout our new [blogpost](#) for more info's. [Got it](#)

Successfully branched package

home:AdaLovelace:branches:devel:kubic / coredns / Overview

Overview Repositories RPM Lint Revisions Requests Users Attributes Meta

coredns [Watch](#)

Set Labels Assign someone

No description set

[Edit](#)

Links to devel:kubic / coredns

- Download package
- Checkout Package
- Create Badge

Source Files (show unmerged sources)

Show 25 entries Search...

Filename	Size	Changed	Actions
_service	534 Bytes	3 months ago	View Download Delete

Build Results

[Refresh](#)

coredns



Adding s390x Builds to home project

Build Service

Places

- Your Requests
- Your Home Project
- All Projects
- Status Monitor

Search

Watchlist Notifications 62

Hey there! Content Moderation is getting more user-friendly! Wanna know more? Checkout our new [blogpost](#) for more info's. [Got it](#)

home:AdaLovelace:branches:devel:kubic / coredns / Repositories

Overview **Repositories** RPM Lint Revisions Requests Users Attributes Meta


Repositories for coredns

You can configure individual flags for this package here. The repositories are inherited from the project [home:AdaLovelace:branches:devel:kubic](#)

Build Flag

Repository	All	aarch64	armv7l	i586	ppc64	ppc64le	s390x	x86_64
All	✓	✓	✓	✓	✓	✓	✓	✓
15.4	✓	✓	✓	✓	✓	✓	✓	✓
15.5	✓	✓	✓	✓	✓	✓	✓	✓
15.6	✓	✓	✓	✓	✓	✓	✓	✓
15.7	✓	✓	✓	✓	✓	✓	✓	✓
16.0	✓	✓	✓	✓	✓	✓	✓	✓
openSUSE_Factory_ARM	✓	✓	✓	✓	✓	✓	✓	✓
openSUSE_Factory_PowerPC	✓	✓	✓	✓	✓	✓	✓	✓
openSUSE_Factory_zSystems	✓	✓	✓	✓	✓	✓	✓	✓
openSUSE_Tumbleweed	✓	✓	✓	✓	✓	✓	✓	✓

Publish Flag



Repository	All	aarch64	armv7l	i586	ppc64	ppc64le	s390x	x86_64
All	✗	✗	✗	✗	✗	✗	✗	✗
15.4	✗	✗	✗	✗	✗	✗	✗	✗
15.5	✗	✗	✗	✗	✗	✗	✗	✗
15.6	✗	✗	✗	✗	✗	✗	✗	✗
15.7	✗	✗	✗	✗	✗	✗	✗	✗
16.0	✗	✗	✗	✗	✗	✗	✗	✗
openSUSE_Factory_ARM	✗	✗	✗	✗	✗	✗	✗	✗
openSUSE_Factory_PowerPC	✗	✗	✗	✗	✗	✗	✗	✗
openSUSE_Factory_zSystems	✗	✗	✗	✗	✗	✗	✗	✗
openSUSE_Tumbleweed	✗	✗	✗	✗	✗	✗	✗	✗



Adding s390x Builds to home project

Build Service

Search Watchlist Notifications 62


Places

- Your Requests
- Your Home Project
- All Projects
- Status Monitor

Hey there! Content Moderation is getting more user-friendly! Wanna know more? Checkout our new [blogpost](#) for more info's. Got it

<p>15.7 x86_64</p> <p>Repository paths: devel:kubic/15.7</p>	<p>16.0 aarch64 x86_64</p> <p>Repository paths: devel:kubic/16.0</p>	<p>openSUSE_Factory_ARM armv7l aarch64</p> <p>Repository paths: devel:kubic/openSUSE_Factory_ARM</p>
<p>openSUSE_Factory_PowerPC ppc64 ppc64le</p> <p>Repository paths: devel:kubic/openSUSE_Factory_PowerPC</p>	<p>openSUSE_Factory_zSystems s390x</p> <p>Repository paths: devel:kubic/openSUSE_Factory_zSystems</p>	<p>openSUSE_Tumbleweed i586 x86_64</p> <p>Repository paths: devel:kubic/openSUSE_Tumbleweed</p>

+ Add from a Distribution + Add from a Project



Adding s390x Builds to home project

Build Service


Search

Watchlist Notifications 62

Places

- Your Requests
- Your Home Project
- All Projects
- Status Monitor

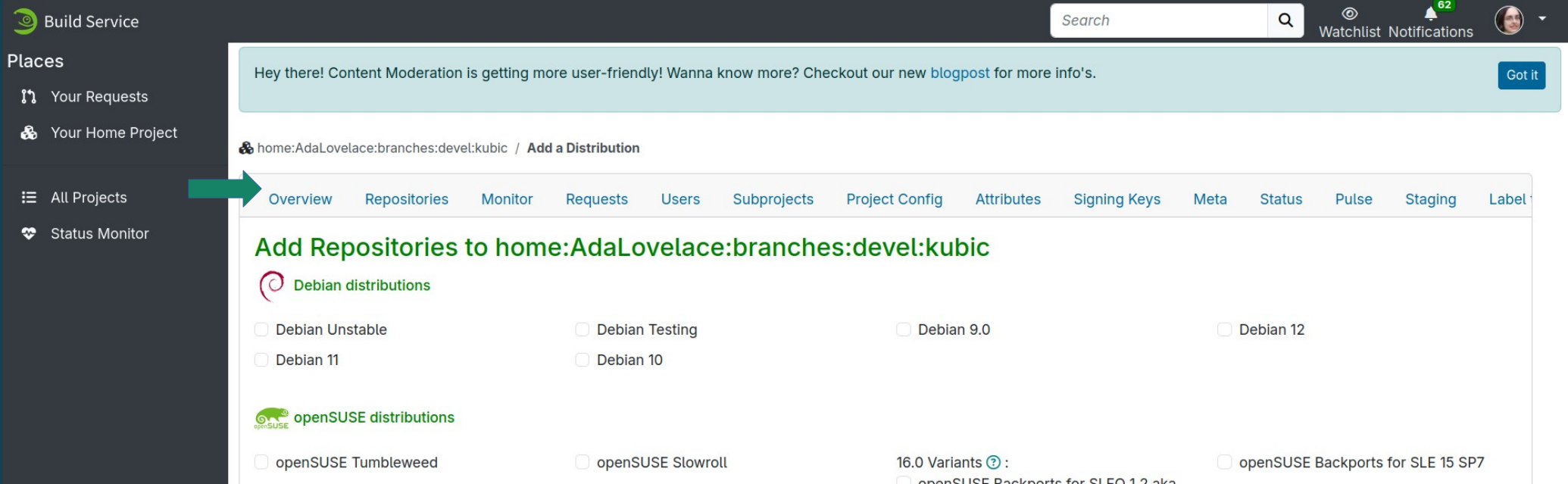
Hey there! Content Moderation is getting more user-friendly! Wanna know more? Checkout our new [blogpost](#) for more info's. Got it

 **openSUSE distributions**

- openSUSE Tumbleweed
- openSUSE Slowroll
- 16.0 Variants ⓘ :
 - openSUSE Backports for SLFO 1.2 aka SLES 16
 - openSUSE Leap 16.0
 - openSUSE Backports for SLE 15 SP4
- openSUSE Backports for SLE 15 SP7
- 15.6 Variants ⓘ :
 - openSUSE Backports for SLE 15 SP6
 - openSUSE Leap 15.6
 - openSUSE Backports for SLE 15 SP2
 - openSUSE Backports for SLE 12 SP3
 - openSUSE Factory zSystems
- 15.5 Variants ⓘ :
 - openSUSE Backports for SLE 15 SP5
 - openSUSE Leap 15.5
 - openSUSE Backports for SLE 15 SP1
 - openSUSE Backports for SLE 12 SP2
 - openSUSE Factory RISCv
- openSUSE Backports for SLE 12 SP5
- openSUSE Backports for SLE 12 SP1
- openSUSE Backports for SLE 12 SP4
- openSUSE Backports for SLE 12 SP0
- openSUSE Factory PowerPC
- openSUSE Factory ARM



Adding s390x Builds to home project



The screenshot shows the Build Service web interface. At the top, there is a search bar and a notification bell with '62' alerts. The left sidebar contains navigation options: 'Build Service', 'Places', 'Your Requests', 'Your Home Project', 'All Projects', and 'Status Monitor'. A green arrow points to the 'Overview' tab in the main content area. The main content area displays a notification banner about content moderation, followed by the breadcrumb 'home:AdaLovelace:branches:devel:kubic / Add a Distribution'. Below this is a navigation menu with tabs: Overview, Repositories, Monitor, Requests, Users, Subprojects, Project Config, Attributes, Signing Keys, Meta, Status, Pulse, Staging, and Labels. The main heading is 'Add Repositories to home:AdaLovelace:branches:devel:kubic'. Underneath, there are two sections: 'Debian distributions' and 'openSUSE distributions'. Each section contains several radio button options for different distributions and versions.

Build Service

Search

Watchlist Notifications

62

Hey there! Content Moderation is getting more user-friendly! Wanna know more? Checkout our new [blogpost](#) for more info's. [Got it](#)

home:AdaLovelace:branches:devel:kubic / Add a Distribution

Overview Repositories Monitor Requests Users Subprojects Project Config Attributes Signing Keys Meta Status Pulse Staging Labels

Add Repositories to home:AdaLovelace:branches:devel:kubic

Debian distributions

Debian Unstable Debian Testing Debian 9.0 Debian 12

Debian 11 Debian 10

openSUSE distributions

openSUSE Tumbleweed openSUSE Slowroll

16.0 Variants ⓘ : openSUSE Backports for SLE 15 SP7



Adding s390x Builds to home project

Build Service

Search [] Watchlist Notifications [62]

Hey there! Content Moderation is getting more user-friendly! Wanna know more? Checkout our new [blogpost](#) for more info's. [Got it](#)

coredns.obsinfo	97 Bytes	3 months ago	Download Delete
coredns.service	280 Bytes	over 6 years ago	Download Delete
coredns.spec	3.66 KB	about 2 months ago	Download Delete
Corefile	737 Bytes	over 6 years ago	Download Delete
fixquic-go.patch	1.99 KB	about 2 months ago	Download Delete
vendor.tar.gz	13.9 MB	3 months ago	Download Delete

page 1 of 1 (10 records) [First](#) [Previous](#) [Next](#) [Last](#)

[Add local files](#) [Add an empty file or service](#)

Latest Revision

Sarah Kriesch (AdaLovelace) committed [9 minutes ago](#) (revision 1) [Browse Source](#)

Comments 0

No comments available

[Write](#) [Preview](#)

[Canned Responses](#)

Write your comment here... (Markdown markup is supported)

[x86_64](#) [succeeded](#)

15.6 [▼](#)

[x86_64](#) [succeeded](#)

15.7 [▼](#)

[x86_64](#) [succeeded](#)

16.0 [▼](#)

[aarch64](#) [building](#)

[x86_64](#) [succeeded](#)

[openSUSE_Factory_ARM](#) [▼](#)

[armv7l](#) [succeeded](#)

[aarch64](#) [succeeded](#)

[openSUSE_Factory_PowerPC](#) [▼](#)

[ppc64le](#) [failed](#)

[openSUSE_Factory_zSystems](#) [▼](#)

[s390x](#) [succeeded](#)

[openSUSE_Tumbleweed](#) [▼](#)

[i586](#) [succeeded](#)

[x86_64](#) [succeeded](#)



Easy example to fix (1)

```
[ 2280s] Requires(rpmlib): rpmlib(CompressedFileNames) <= 3.0.4-1 rpmlib(FileDigests) <= 4.6.0-1 rpmlib(PayloadFilesHavePrefix) <= 4.0-1
[ 2280s] Recommends: plasma6-desktop-debugsource(s390-64) = 6.4.1-68.1
[ 2280s] Processing files: plasma6-desktop-emojier-debuginfo-6.4.1-68.1.s390x
[ 2280s] Provides: debuginfo(build-id) = 9efdb9baf650ebf2d50c4b52490f2756849c5b7c plasma6-desktop-emojier-debuginfo = 6.4.1-68.1 plasma6-desktop-emojier-debuginfo(s390-64) = 6.4.1-68.1
[ 2280s] Requires(rpmlib): rpmlib(CompressedFileNames) <= 3.0.4-1 rpmlib(FileDigests) <= 4.6.0-1 rpmlib(PayloadFilesHavePrefix) <= 4.0-1
[ 2280s] Recommends: plasma6-desktop-debugsource(s390-64) = 6.4.1-68.1
[ 2280s] Processing files: plasma6-kimpanel-ibus-debuginfo-6.4.1-68.1.s390x
[ 2280s] Provides: debuginfo(build-id) = 873cb1dacbd863004c6d2360bddd9519b98eda4e debuginfo(build-id) = a5b28a5e68098834748a5087456113706bb6c67a plasma6-kimpanel-ibus-debuginfo = 6.4.1-68.1 plasma6-kimpanel-ibus-debuginfo(s390-64) = 6.4.1-68.1
[ 2280s] Requires(rpmlib): rpmlib(CompressedFileNames) <= 3.0.4-1 rpmlib(FileDigests) <= 4.6.0-1 rpmlib(PayloadFilesHavePrefix) <= 4.0-1
[ 2280s] Recommends: plasma6-desktop-debugsource(s390-64) = 6.4.1-68.1
[ 2280s] Checking for unpackaged file(s): /usr/lib/rpm/check-files /home/abuild/rpmbuild/BUILD/plasma6-desktop-6.4.1-build/BUILDROOT
[ 2280s] error: Installed (but unpackaged) file(s) found:
[ 2280s]   /usr/share/applications/kcm_mouse.desktop
[ 2280s]   /usr/share/applications/kcm_touchpad.desktop
[ 2280s]
[ 2280s] RPM build errors:
[ 2280s]   Installed (but unpackaged) file(s) found:
[ 2280s]   /usr/share/applications/kcm_mouse.desktop
[ 2280s]   /usr/share/applications/kcm_touchpad.desktop
[ 2280s] ### VM INTERACTION START ###
[ 2281s] Powering off.

[ 2282s] ### VM INTERACTION END ###
```



Easy example to fix (1)

```
[ 2280s] Requires(rpmlib): rpmlib(CompressedFileNames) <= 3.0.  
[ 2280s] Recommends: plasma6-desktop-debugsource(s390-64) = 6.  
[ 2280s] Processing files: plasma6-desktop-emojier-debuginfo-6  
[ 2280s] Provides: debuginfo(build-id) = 9efdb9baf650ebf2d50c4  
[ 2280s] Requires(rpmlib): rpmlib(CompressedFileNames) <= 3.0.  
[ 2280s] Recommends: plasma6-desktop-debugsource(s390-64) = 6.  
[ 2280s] Processing files: plasma6-kimpanel-ibus-debuginfo-6.4  
[ 2280s] Provides: debuginfo(build-id) = 873cb1dacbd863004c6d2  
kimpanel-ibus-debuginfo(s390-64) = 6.4.1-68.1  
[ 2280s] Requires(rpmlib): rpmlib(CompressedFileNames) <= 3.0.  
[ 2280s] Recommends: plasma6-desktop-debugsource(s390-64) = 6.  
[ 2280s] Checking for unpackaged file(s): /usr/lib/rpm/check-f  
[ 2280s] error: Installed (but unpackaged) file(s) found:  
[ 2280s] /usr/share/applications/kcm_mouse.desktop  
[ 2280s] /usr/share/applications/kcm_touchpad.desktop  
[ 2280s]  
[ 2280s] RPM build errors:  
[ 2280s] Installed (but unpackaged) file(s) found:  
[ 2280s] /usr/share/applications/kcm_mouse.desktop  
[ 2280s] /usr/share/applications/kcm_touchpad.desktop  
[ 2280s] ### VM INTERACTION START ###  
[ 2281s] Powering off.  
  
[ 2282s] ### VM INTERACTION END ###
```

```
362 %{{_kf6_sharedir}}/accounts/services/kde/opendesktop-rating.service  
363 %{{_kf6_sharedir}}/dbus-1/system-services/org.kde.kcontrol.kcmclock.service  
364 %{{_kf6_sharedir}}/kcm_recentFiles/  
365 %{{_kf6_sharedir}}/kcmkeys/  
366 %{{_kf6_sharedir}}/kcmsolidactions/  
367 %{{_kf6_sharedir}}/polkit-1/actions/org.kde.kcontrol.kcmclock.policy  
368 %{{_kf6_sharedir}}/kglobalaccel/org.kde.touchpadshortcuts.desktop  
369 %{{_kf6_applicationsdir}}/kcm_mouse.desktop  
370 %{{_kf6_applicationsdir}}/kcm_touchpad.desktop  
371 %dir %{{_kf6_sharedir}}/sddm  
372 %dir %{{_kf6_sharedir}}/sddm/themes  
373 %{{_kf6_sharedir}}/sddm/themes/breeze/  
374 %{{_kf6_sharedir}}/solid/  
375 %{{_kf6_libexecdir}}/kauth/kcmdatetimetypehelper  
376 %{{_kf6_iconsdir}}/hicolor/*/devices/input-touchpad.*  
377 %{{_kf6_sharedir}}/kcmmouse/  
378 %exclude %{{_kf6_plasmadir}}/emoji/  
379 %ifnarch s390 s390x  
380 %{{_kf6_bindir}}/kapplymousetheme  
381 %{{_kf6_bindir}}/kcm-touchpad-list-devices  
382 %endif
```



Easy example to fix (1)

```
[ 2280s] Requires(rpmlib): rpmlib(CompressedFileNames) <= 3.0.4-1 rpmlib(FileDigests) <= 4.6.0-1 rpmlib(PayloadFilesHavePrefix) <= 4.0-1
[ 2280s] Recommends: plasma6-desktop-debugsource(s390-64) = 6.4.1-68.1
[ 2280s] Processing files: plasma6-desktop-emojier-debuginfo-6.4.1-68.1.s390x
[ 2280s] Provides: debuginfo(build-id) = 9efdb9baf650ebf2d50c4b52490f2756849c5b7c plasma6-desktop-emojier-debuginfo = 6.4.1-68.1 plasma6-desktop-emojier-debuginfo(s390-64) = 6.4.1-68.1
[ 2280s] Requires(rpmlib): rpmlib(CompressedFileNames) <= 3.0.4-1 rpmlib(FileDigests) <= 4.6.0-1 rpmlib(PayloadFilesHavePrefix) <= 4.0-1
[ 2280s] Recommends: plasma6-desktop-debugsource(s390-64) = 6.4.1-68.1
[ 2280s] Processing files: plasma6-kimpanel-ibus-debuginfo-6.4.1-68.1.s390x
[ 2280s] Provides: debuginfo(build-id) = 873cb1dacbd863004 kimpanel-ibus-debuginfo(s390-64) = 6.4.1-68.1 plasma6-
kimpanel-ibus-debuginfo(s390-64) = 6.4.1-68.1
[ 2280s] Requires(rpmlib): rpmlib(CompressedFileNames) <=
[ 2280s] Recommends: plasma6-desktop-debugsource(s390-64)
[ 2280s] Checking for unpackaged file(s): /usr/lib/rpm/che
[ 2280s] error: Installed (but unpackaged) file(s) found:
[ 2280s]   /usr/share/applications/kcm_mouse.desktop
[ 2280s]   /usr/share/applications/kcm_touchpad.desktop
[ 2280s]
[ 2280s] RPM build errors:
[ 2280s]   Installed (but unpackaged) file(s) found:
[ 2280s]   /usr/share/applications/kcm_mouse.desktop
[ 2280s]   /usr/share/applications/kcm_touchpad.desktop
[ 2280s] ### VM INTERACTION START ###
[ 2281s] Powering off.
[ 2282s] ### VM INTERACTION END ###
```

```
374 %{{_kf6_iconsdir}}/nicolton / / devices/ input - touchpad .
375 %{{_kf6_sharedir}}/kcmmouse/
376 %exclude %{{_kf6_plasmadir}}/emoji/
377 %ifnarch s390 s390x
378 %{{_kf6_applicationsdir}}/kcm_mouse.desktop
379 %{{_kf6_applicationsdir}}/kcm_touchpad.desktop
380 %{{_kf6_bindir}}/kapplymousetheme
381 %{{_kf6_bindir}}/kcm-touchpad-list-devices
382 %endif
383 %{{_userunitdir}}/plasma-kaccess.service
384
385 %files emojiier
```



Easy example to fix (2)

```
[ 16s] + cd /home/abuild/rpmbuild/BUILD/kubectl-who-can-0.4.0-build
[ 16s] + /usr/bin/rm -rf /home/abuild/rpmbuild/BUILD/kubectl-who-can-0.4.0-build/BUILDROOT
[ 16s] ++ dirname /home/abuild/rpmbuild/BUILD/kubectl-who-can-0.4.0-build/BUILDROOT
[ 16s] + /usr/bin/mkdir -p /home/abuild/rpmbuild/BUILD/kubectl-who-can-0.4.0-build
[ 16s] + /usr/bin/mkdir /home/abuild/rpmbuild/BUILD/kubectl-who-can-0.4.0-build/BUILDROOT
[ 16s] + cd kubectl-who-can-0.4.0
[ 16s] + sed -i -e 's|go build -o|go build -buildmode=pie -mod vendor -o|g' Makefile
[ 16s] + make
[ 19s] GO111MODULE=on CGO_ENABLED=0 go build -buildmode=pie -mod vendor -o kubectl-who-can ./cmd/kubectl-who-can/main.go
[ 19s] -buildmode=pie requires external (cgo) linking, but cgo is not enabled ←
[ 19s] make: *** [Makefile:7: kubectl-who-can] Error 1
[ 19s] error: Bad exit status from /var/tmp/rpm-tmp.8j7eSU (%build)
[ 19s]
```



Easy example to fix (2)

```
[ 16s] + cd /home/abuild/rpmbuild/BUILD/kubectl-who-can-0.4.0-build
[ 16s] + /usr/bin/rm -rf /home/abuild/rpmbuild/BUILD/kubectl-who-can-0.4.0-build/BUILDROOT
[ 16s] ++ dirname /home/abuild/rpmbuild/BUILD/kubectl-who-can-0.4.0-build/BUILDROOT
[ 16s] + /usr/bin/mkdir -p /home/abuild/rpmbuild/BUILD/kubectl-who-can-0.4.0-build
[ 16s] + /usr/bin/mkdir /home/abuild/rpmbuild/BUILD/kubectl-who-can-0.4.0-build/BUILDROOT
[ 16s] + cd kubectl-who-can-0.4.0
[ 16s] + sed -i -e 's|go build -o|go build -buildmode=pie -mod vendor -o|g' Makefile
[ 16s] + make
[ 19s] GO111MODULE=on CGO_ENABLED=0 go build -buildmode=%build
[ 19s] -buildmode=pie requires external (cgo) linking, %ifarch s390x %arm i586 riscv64
[ 19s] make: *** [Makefile:7: kubectl-who-can] Error 1 CGO_ENABLED=1 \
[ 19s] error: Bad exit status from /var/tmp/rpm-tmp.8j7 %else
[ 19s] CGO_ENABLED=0 \
%endif
go build \
  -mod=vendor \
  -buildmode=pie \
  -o bin/%{name}
```



Difference to x86 – Byte Order

- Big Endian Byte Order (reverse counting)
- CISC (Complex Instruction Set Computing) type processor architecture
- Memory addresses affected
- Network data and host data can be affected on application level
- 32 bit words in reverse order
- Example Conversions:

TEST → TSET

Reference: Gellerich, Wolfgang: Unfortunately, There's No Free Lunch—
Not Even For Penguins. Porting Applications to Linux on System z,
z/Journal, July 2008

32 Bit Word

x86:

|31|30|29|...|3|2|1|0|

s390x:

|0|1|2|3|...|29|30|31|

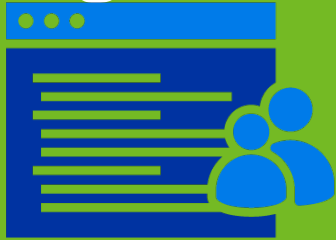


The Open Mainframe Project

- **Founded 2015**
- **Focal point for deployment and usage of Linux and Open Source in a mainframe computing environment**
- **Project under the Linux Foundation**



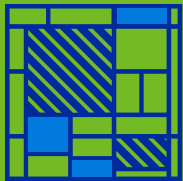
Working Groups



OPEN **MAINFRAME** PROJECT

COBOL

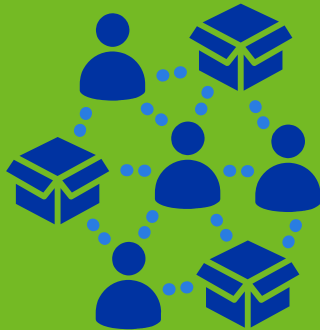
Working Group



OPEN **MAINFRAME** PROJECT

Modernization

WORKING GROUP



OPEN **MAINFRAME** PROJECT

Linux Distributions

Working Group



arm



geekos.org



fedora



JETBRAINS



SUSE



tropicsquare

Kick-off with Community Linux Distributions

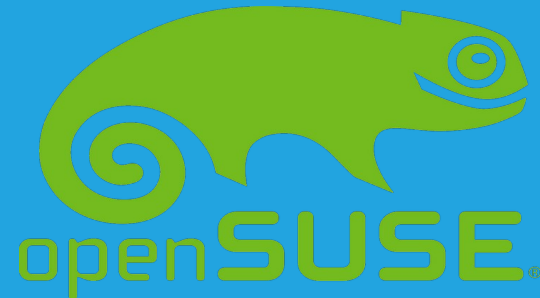


debian

Rajendra Nayak



Dan Horák



Sarah Julia Kriesch



Elizabeth K. Joseph



The Linux Distributions Working Group



SUSE



Rocky Linux™



ubuntu®



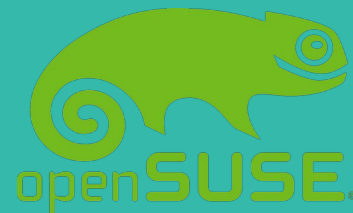
AlmaLinux



debian



Red Hat



Our structure

- Founders/ (Co-)Chairs:
- Sarah Julia Kriesch (openSUSE, Kyndryl)
- Elizabeth K. Joseph (Ubuntu, IBM)
- One Representative for every Linux distribution (required for input)
- Upstream Developers welcome during our meetings :-)
- Sponsor: SUSE



Our Goals

- Create a place to collaborate across Linux Distributions via an OMP mailing list, wiki, and chat
- Provide a space for distributions to request for help on their port
- Ensure any and all infrastructure required is available for supporting the ports
- Better support from IBM to fix s390x specific bugs

<https://wiki.openmainframeproject.org/display/LinuxDistrosWG/Linux+Distributions+Working+Group>



LinuxONE (OSS) Community Cloud

- LinuxONE Community Cloud providing VMs for 120 days for Developers, Students, Professors:

- <https://developer.ibm.com/articles/get-started-with-ibm-linuxone/>

Hint: Account will be removed afterwards and recreation possible

- LinuxONE OSS Community Cloud available for OSS Projects with Long-Term VM access
- openSUSE zSystems has got 7 VMs for development and hackathons
- Requirement: Any open source project as a reference
- Choices between Ubuntu, RHEL and SLES (upgrade to openSUSE possible!)
- <https://www.ibm.com/community/z/open-source/virtual-machines-request/>



arm



References

- Training material:
<https://en.opensuse.org/ZSystems>
- OBS:
<https://build.opensuse.org/project/show/openSUSE:Factory:zSystems>



arm



Q&A



arm



geekos.org



fedora



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SUSE



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