Tips and tools for porting your open source application to IBM LinuxONE

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Hello, there!

- Spent 15 years as a Linux Systems Administrator, mostly on distributed systems.
- Author of books on Ubuntu and OpenStack.
- Now I get to work with open source software developers on Linux on IBM Z and LinuxONE.

IBM Z / zArchitecture / s390x

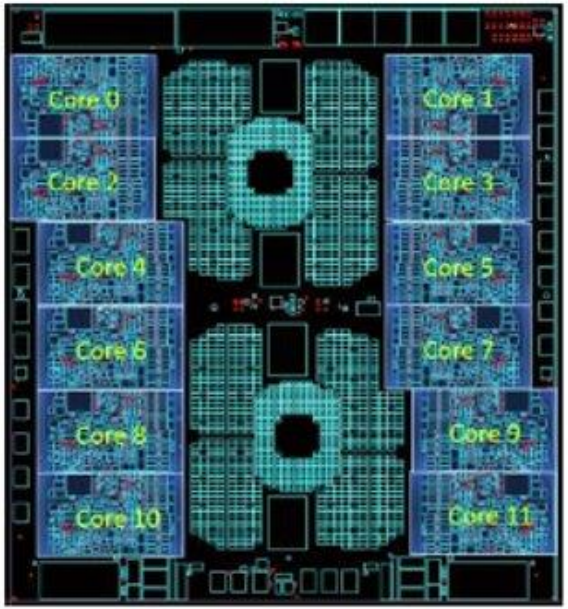
First, let's talk about hardware

IBM Z is not x86, the processors are exclusive to IBM Z and LinuxONE.

Code needs to be compiled or interpreted for the platform.

You're in luck, there are loads of open source compilers and interpreters for Linux on IBM Z. C, Go, Python, Node.js...

Pro tip: In the Linux world, you'll often see the architecture referred to as "s390x"



Why should I port my app to Linux on IBMZ and LinuxONE?

Adoption of Linux on IBM Z is rapidly growing, with it you can start reaching a broader, more serious, enterprise audience.

Non-x86 architectures are becoming increasingly popular, get a head start.

By learning more about architectures like s390x, ppc64le, and ARM, you become a better developer.

Following in the steps of giants

Many open source projects have come before you http://community.ibm.com/z/open-source

Let's take a closer look at part of that diagram...

A Linux distribution is made up of a bunch of software, so does that mean that everything that's part of Red Hat, SUSE, and Ubuntu has been compiled for IBM Z?

Not quite.

But it is the core operating system, and a large chunk beyond that!

There's lot of software that just compiled fine without any changes – neat!

Now, languages!

Your code probably will compile fine! Try it! But if not, consider...

Lower-level languages are, by definition, closer to the hardware.

These are more apt to take advantage of architecture-specific instructions, and thus be tied to an architecture.

Struggling to build for Z? This is an opportunity to learn why, and see whether the benefit is worth it, and how your code may be changed to support a broader range of hardware.

Higher-level languages usually "just work" out of the box.

The most common stumbling block is dependencies that aren't ported! This could be in the form of a module for your language or other software projects that yours depends on.

Cool, how do I get one?

Well, they're kind of big*

- Several community-driven Linux distributions actually do have access to one! For instance, the Debian community has a build for x390x.
- Two of the commercial distributions make their systems available to community contributors.
- There are also a couple free CI systems.
- And you can get your hands on a full Linux on Z VM!

So let's dig in, shall we?

* But not as big as they used to be! The IBM z15 and LinuxONE III fit in the space of a standard 19" rack, and increments thereof up, to 4 wide

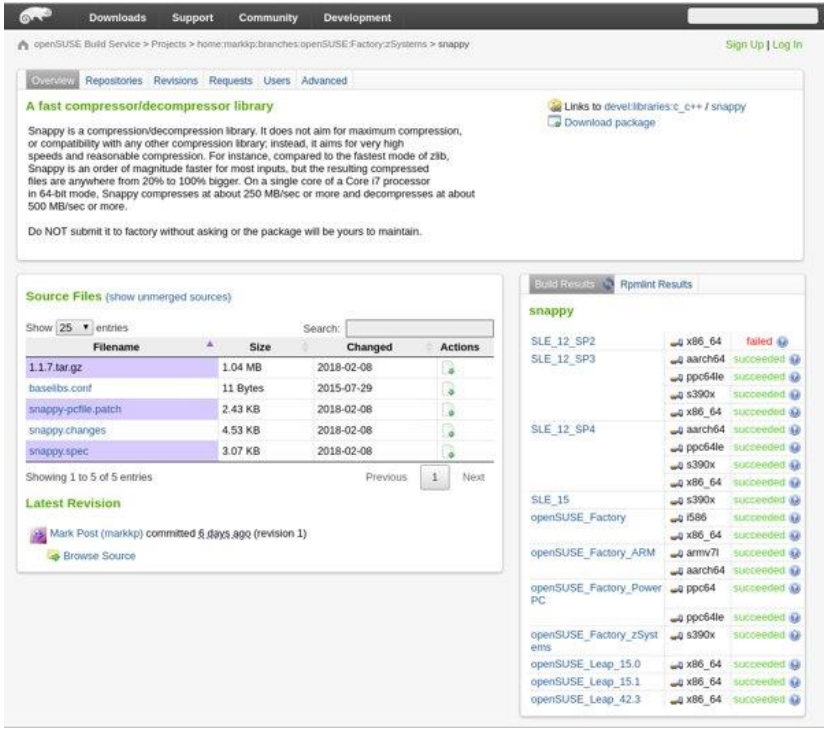
openSUSE Build Service

The openSUSE Build Service automatically builds your application for multiple architectures and distributions.

You do have to be familiar with software packaging of at least RPMs, but then the build service takes it from there.

https://build.opensuse.org/

https://en.opensuse.org/Portal:Build_Service

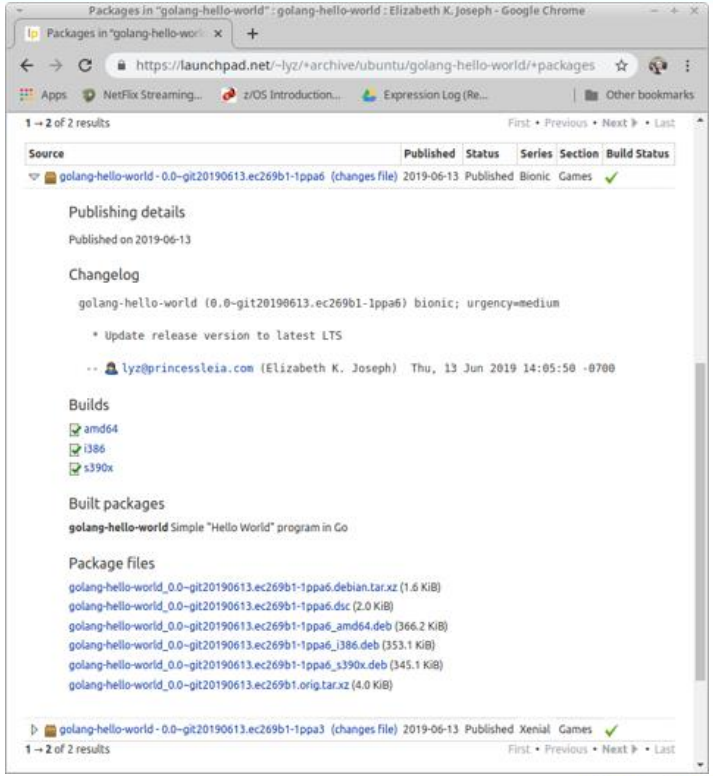


Launchpad Personal Package Archives for Ubuntu

Launchpad.net, hosted by Canonical, maintains a Personal Package Archive (PPA) service that allows you to build for multiple architectures by selecting them.

Familiarity with .deb packaging is required, but at the end you get .deb packages, and an Ubuntu repository URL for users.

https://help.launchpad.net/Packaging/PPA



//* IBM Z DAY
//* open | on | secure

Open Mainframe Project: Supported Projects Program

"Open Mainframe Project provides the needed infrastructure and program support for many open source projects that support mainframe. This tailored support program gives each project the ability to leverage the project's mainframe infrastructure, ecosystem development, funded development channels, and legal management.

- Hosted mainframe infrastructure for build/test/development for the project
- Promotion of the project supporting mainframe via Open Mainframe Project promotion channels (blog, social, events) to engage contribution from the mainframe community.
- Access to propose internship and academic projects through the Open Mainframe Project
- Leveraging any Open Mainframe Project collaborative infrastructure for supporting mainframe community engagement (inclusive of code repositories, forums, chat, and any other developer collaboration tools used)"

https://www.openmainframeproject.org/projects/supported-projects

OSU Open Source Lab IBM Z Continuous Integration

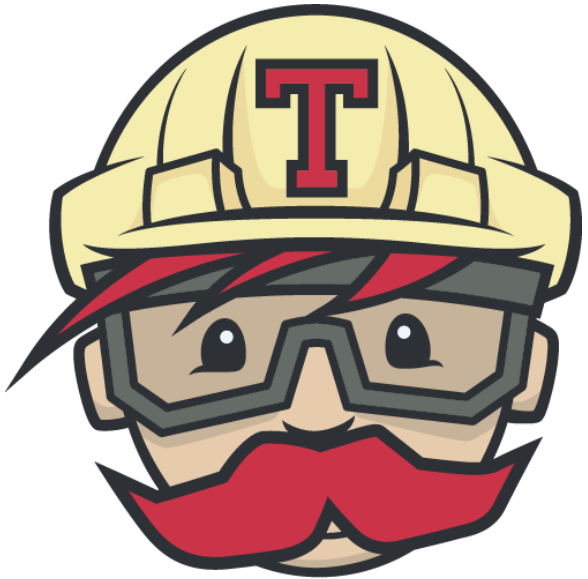
Already using Jenkins for your project CI? The Oregon State University Open Source Lab (OSU OSL) manages a Jenkins service!

https://osuosl.org/services/ibm-z/

Travis CI build service for IBM Z

Travis CI user? It just takes a couple changes to your build config to try out the IBM Z beta program for open source projects.

https://docs.travis-ci.com/user/multi-cpu-architectures/



IBM LinuxONE Community Cloud

120 days access to a SLES or RHEL Virtual Machine.

Come talk to me if you want one for longer ;) a CI system perhaps?

Learn more and sign up: https://developer.ibm.com/components/ibm-linuxone/gettingstarted/

And then join our community: https://www.ibm.com/community/z/linuxone-cc/

Questions?

Or reach out afterwards! Email lyz@ibm.com or @pleia2 on Twitter

Find other like-minded open source contributors at the Open Mainframe Project https://www.openmainframeproject.org/

And join us over in the IBM Z Community: Open Source Software Development user group! https://www.ibm.com/community/z/usergroups/opensource

I also wrote about this topic on IBM Developer https://developer.ibm.com/components/ibm-linuxone/blogs/developer-resources-for-building-your-open-source-app-for-linux-on-ibm-z-and-linuxone/

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15 SEPTEMBER 2020
THANK YOU!
Join the IBM Z & LinuxONE Community: ibm.com/community/z/