IBM TechXchange Dev Days

Linux Fundamentals, Topped with a Touch of AI 🍨 [Hands on!]

{dev}

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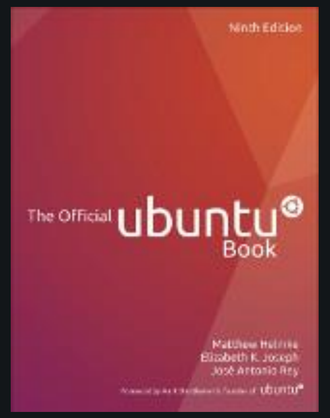
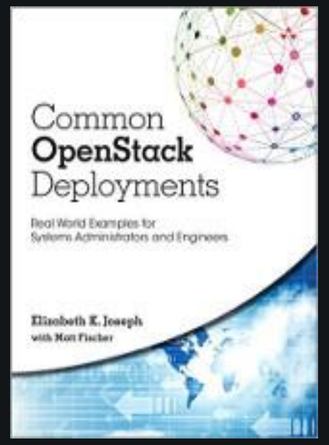
Linux SRE by trade, joined IBM in 2019 with a focus on Linux on IBM Z and LinuxONE

Wrote books on Ubuntu and OpenStack





Presents at open source and systems conferences worldwide

Linux Basics

(on Linux on IBM Z & LinuxONE!)

AI on Linux

Workshop Materials:

ibm.biz/LinuxFun25

IBM Z & LinuxONE: Explained

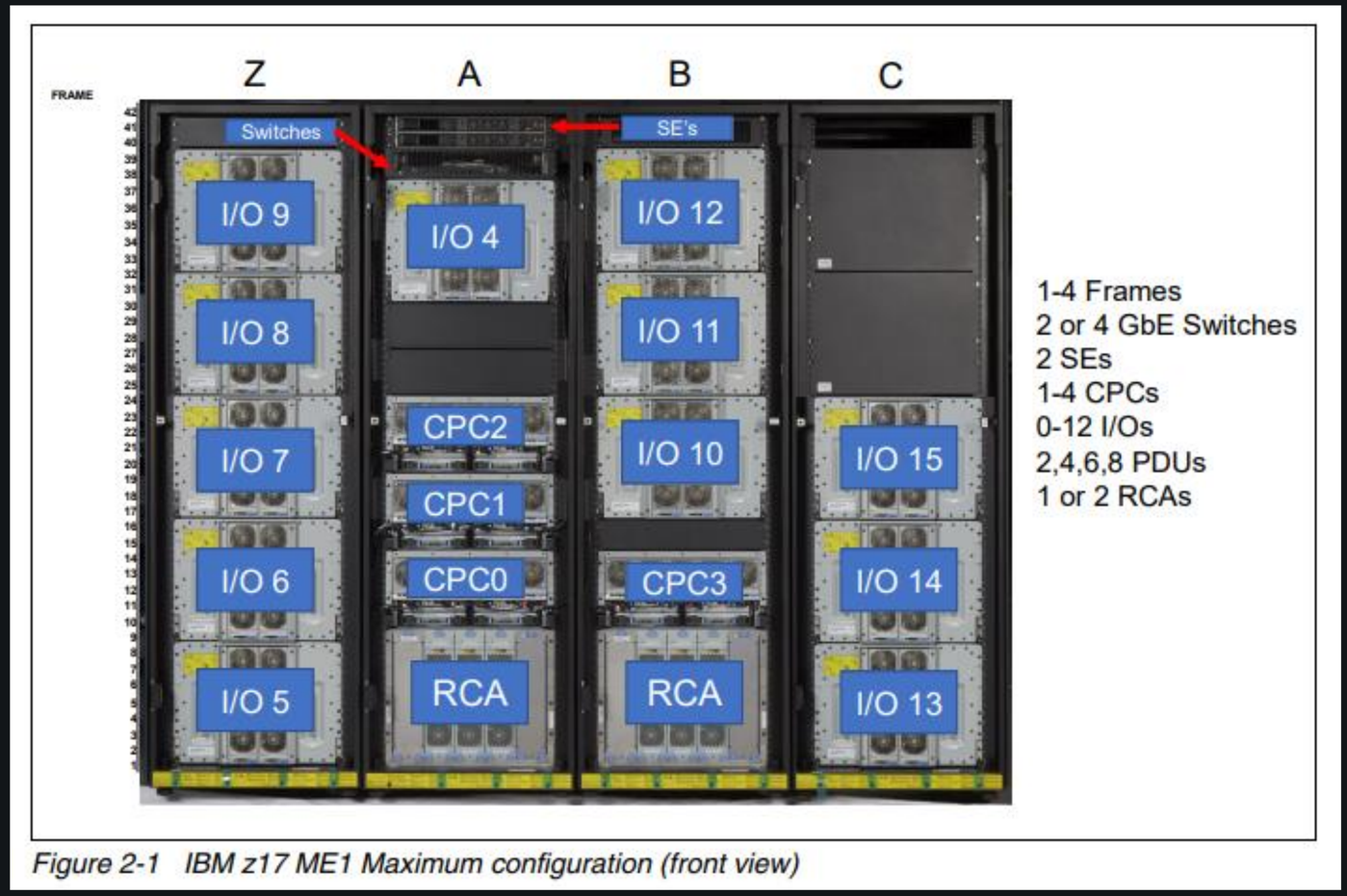


Figure 2-1 IBM z17 ME1 Maximum configuration (front view)

https://community.ibm.com/community/user/blogs/elizabeth-k-joseph1/2025/04/23/a-tour-inside-the-ibm-z17 &
https://community.ibm.com/community/user/blogs/elizabeth-k-joseph1/2025/05/05/journey-inside-the-ibm-linuxone-5

IBM Z & LinuxONE: Explained

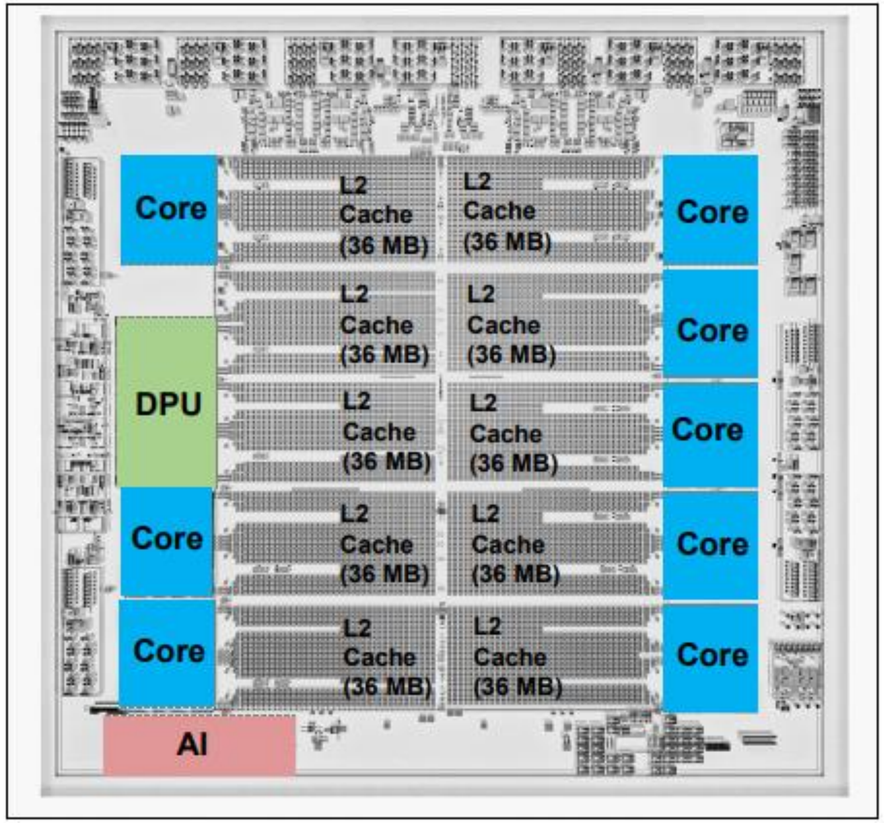
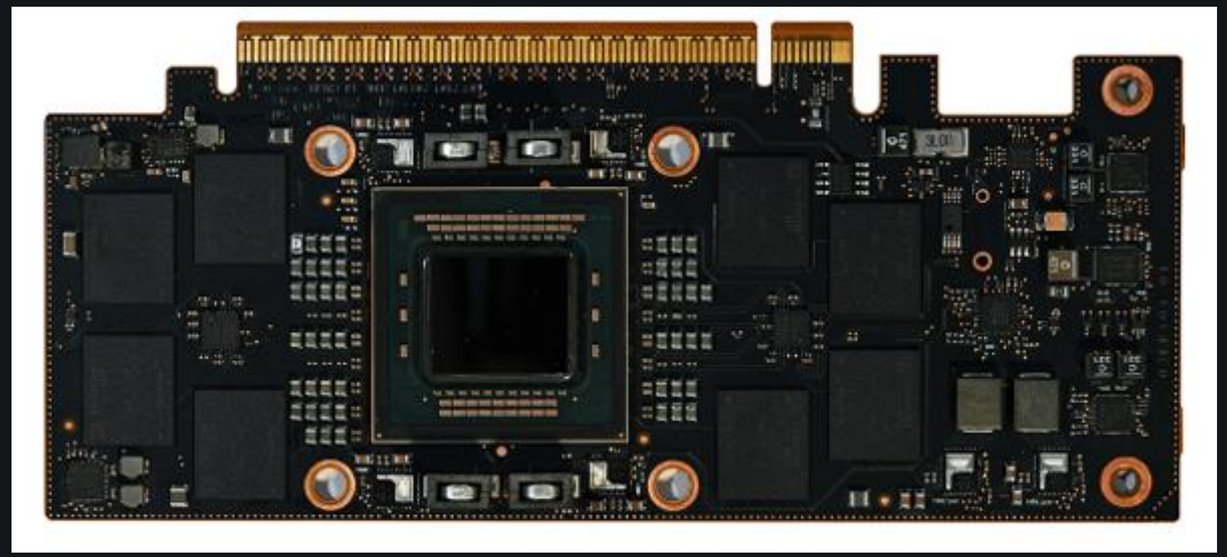


Figure 2-13 Single PU chip floor plan



Linux Basics 

Workshop Materials:

ibm.biz/LinuxFun25

IBM LinuxONE Community Cloud

Sign up for the IBM LinuxONE Community Cloud

Workshop Materials:
ibm.biz/LinuxFun25

And follow the instructions to launch a RHEL 9.3 Virtual Machine.

IMPORTANT Use the event code:

devday25

Linux in a nutshell

Kernel released in 1991 and combined with existing GNU tools to create an operating system

Grew in prominence for server, embedded, and devices in the 2000s

Today Linux is the most popular operating system in the world (Android uses a Linux kernel!)

Popular distributions

- Red Hat Enterprise Linux (RHEL)
- SUSE Linux Enterprise Server (SLES)
- Ubuntu
- Arch Linux
- Debian
- Fedora

...and thousands of others

Workshop Materials: ibm.biz/LinuxFun25

Log in, navigate, and explore! 

```
$ cd ~
$ mkdir test
$ cd test
$ touch file1
$ touch file2
$ ls file1
$ rm file1
$ pwd
$ cd /
$ ls -l
```

- bin - where programs (binaries) are kept
- etc - System-wide configuration files
- home - Where users keep their own files, including you!
- lib - Short for “library”. Shared code and kernel libraries
- opt – Add-on application software packages
- root - Where the system administrator (root) keeps their files
- usr - Shared, read-only files, which includes some binaries and documentation
- var - Short for “variable” files. Items in here change frequently, including logs, printer spools, and some caches.

Workshop Materials: ibm.biz/LinuxFun25

Learn about your system

```
$ cat /etc/*release
$ lscpu
$ df
$ ps aux
$ date
$ lsmod
$ ip addr
$ man ip
```

Install software & edit a file 🗒️

```
$ cd
$ sudo dnf install nano
$ nano test/file2
```


Workshop Materials: ibm.biz/LinuxFun25

Build a website!

```
$ sudo dnf install httpd
$ sudo systemctl start httpd
$ sudo systemctl enable httpd
$ sudo systemctl status httpd
$ sudo nano
/var/www/html/index.html
```

Write the following in your file:

```
<html>
  <body>
    <h1>This is my website!</h1>
  </body>
</html>
```


Workshop Materials: ibm.biz/LinuxFun25

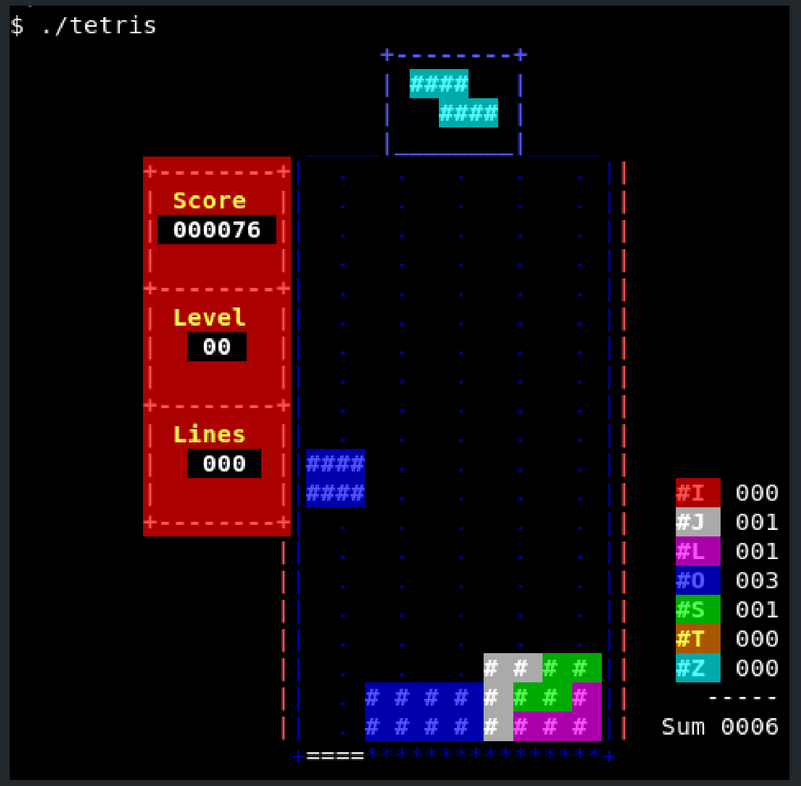
Let the traffic in and go!

```
$ sudo iptables -I INPUT -p tcp --dport 80 -j ACCEPT
```

Open a browser type your server IP into the address bar.

Build some code and have some fun!

```
$ sudo dnf install make gcc
$ curl -LO
https://github.com/vicgeralds/vitetris/archive/refs/tags/v0.59.1.tar.gz
$ tar xvf v0.59.1.tar.gz
$ cd vitetris-0.59.1/
$ ./configure
$ make
$ ./tetris
```



Workshop Materials: ibm.biz/LinuxFun25

Learn more about Linux 

1

Coursera: Hands-on Introduction to Linux Commands and Shell Scripting by IBM

2

Book: UNIX and Linux System Administration Handbook by Evi Nemeth, et al.

3

IBM LinuxONE Fast Start Guides

4

Start a project and learn along the way!

AI on IBM LinuxONE 🍒

"TensorFlow is an end-to-end platform that makes it easy for you to build and deploy ML models."

tensorflow.org/learn

tensorflow.org/tutorials

ibm.github.io/ai-on-z-101/tensorflow/

"PyTorch is an open source machine learning framework that accelerates the path from research prototyping to production deployment."

docs.pytorch.org/tutorials/

ibm.github.io/ai-on-z-101/pytorch/

"ONNX is an open format built to represent machine learning models. ONNX defines a common set of operators - the building blocks of machine learning and deep learning models - and a common file format to enable AI developers to use models with a variety of frameworks, tools, runtimes, and compilers."

onnx.ai/onnx/intro/

ibm.github.io/ai-on-z-101/onnxdlc/

Triton Inference Server & Snap ML

"NVIDIA Triton Inference Server provides a cloud and edge inferencing solution optimized for both CPUs and GPUs."

ibm.github.io/ai-on-z-101/tritonis/

"Snap ML is a library that provides high speed training and inference of popular machine learning models."

ibm.github.io/ai-on-z-101/snapml/

IBM Z & LinuxONE + AI!

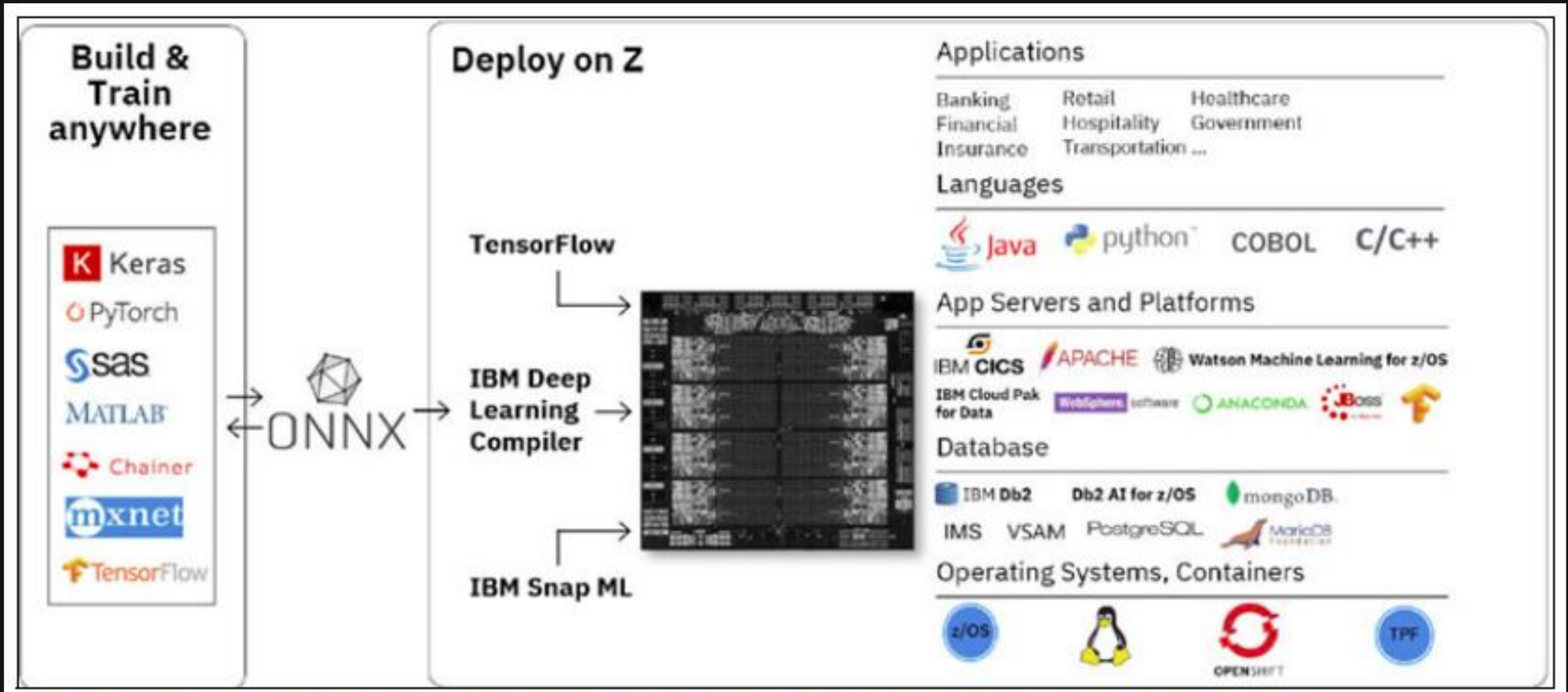
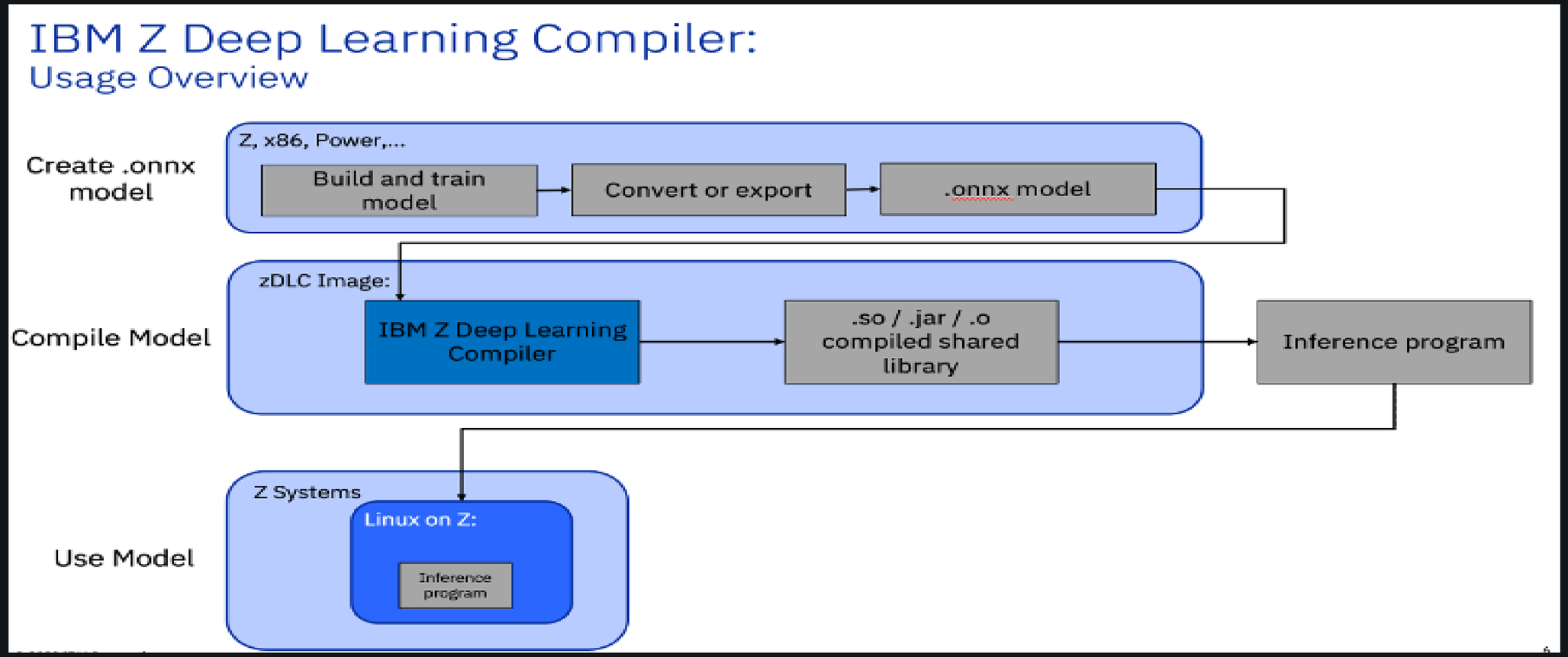


Figure 2-1 ONNX ecosystem for IBM z16 Integrated Accelerator for AI on IBM Telum

IBM Z & LinuxONE + AI!



Learn more about AI on LinuxONE 👩‍🏫

1

Website: Journey to AI on IBM Zand LinuxONE

2

RedPaper: Enriching Linux on IBM Z Workloads with AI

3

Doumentation: AI on Z 101

4

Join the workshop coming up next! "AI on IBM Z/LinuxONE: Hands-on experience"

Thank You

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Text based

36/44/54/86pt headline, 2 lines maximum, sentence case

36/44pt text, sentence case

36/44pt text, sentence case

54/86pt headline, 3 lines maximum, sentence case

Section one

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Section two

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Section three

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Section one

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Section three

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54/86pt headline, 3 lines maximum, sentence case

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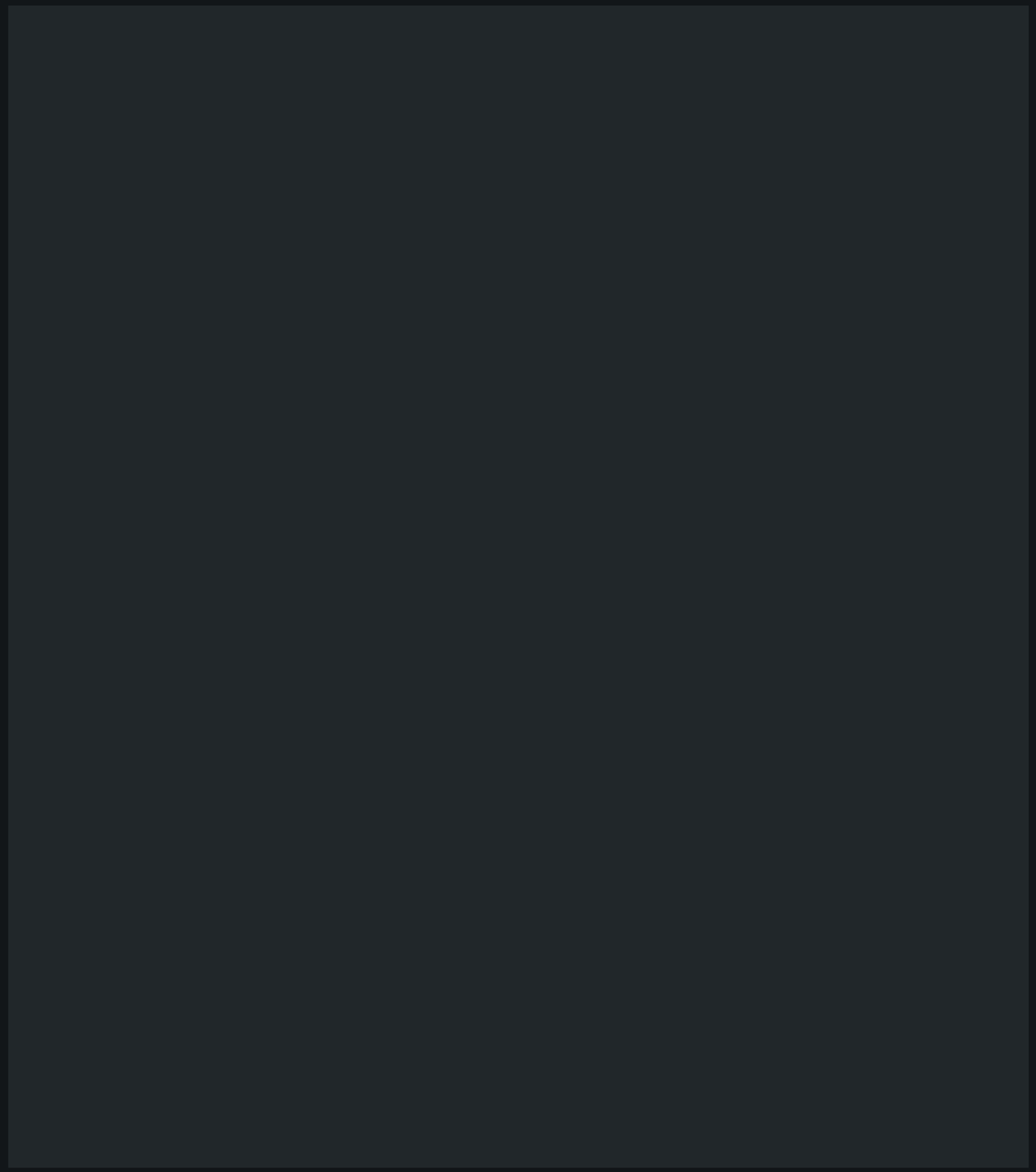
54/86/172pt Go simple and big if possible



Ending

Thank You

Name Surname
Position & Company

Contact Info

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