

Ellexus Ltd: The I/O Profiling Company

Products: We make tools to help you take control of the way you access your data.

Industries: Where big compute meets big data!

Customers include:



Ellexus: The I/O Profiling Company
www.ellexus.com

Why should you care about I/O profiling?

Bad I/O harms performance

Bad I/O patterns can harm shared storage and will limit application performance.

IT managers, infrastructure engineers and users

I/O is your problem

Cloud and new compute platforms make I/O more important

Moving to new platforms can expose new I/O problems



Our products

Ellexus Breeze

Detailed I/O profiling
Dependency analysis
Migration made easy



Our products

Ellexus Mistral

Lightweight I/O profiling
Whole cluster monitoring
Protects storage from rogue jobs

Ellexus Breeze

Detailed I/O profiling
Dependency analysis
Migration made easy



Our products

Ellexus Mistral

Lightweight I/O profiling
Whole cluster monitoring
Protects storage from rogue jobs

Ellexus Healthcheck

Make everyone an I/O expert
with one simple report

Ellexus Breeze

Detailed I/O profiling
Dependency analysis
Migration made easy



ARM migration: our experience

**We started at Step 0:
run our tools on a Raspberry Pi**

Answered “will it work?”, but didn’t
actually save us any time



ARM migration: lift and shift

Step 1: Cross compile and migrate

Cross compiler now part of GCC:

aarch64-linux-gnu-gcc

- Version 6+ was recommended
- We used version 6.3.0

Some fiddling to get it working with our build

- Inline assembly
- Glibc 2.17 for AArch64 support

Easy from then on as we have few dependencies

Moving legacy applications?

Breeze can detect application runtime dependencies so you know what you need to move.

Run on x86 or ARM to work out what you are missing.



ARM migration: testing

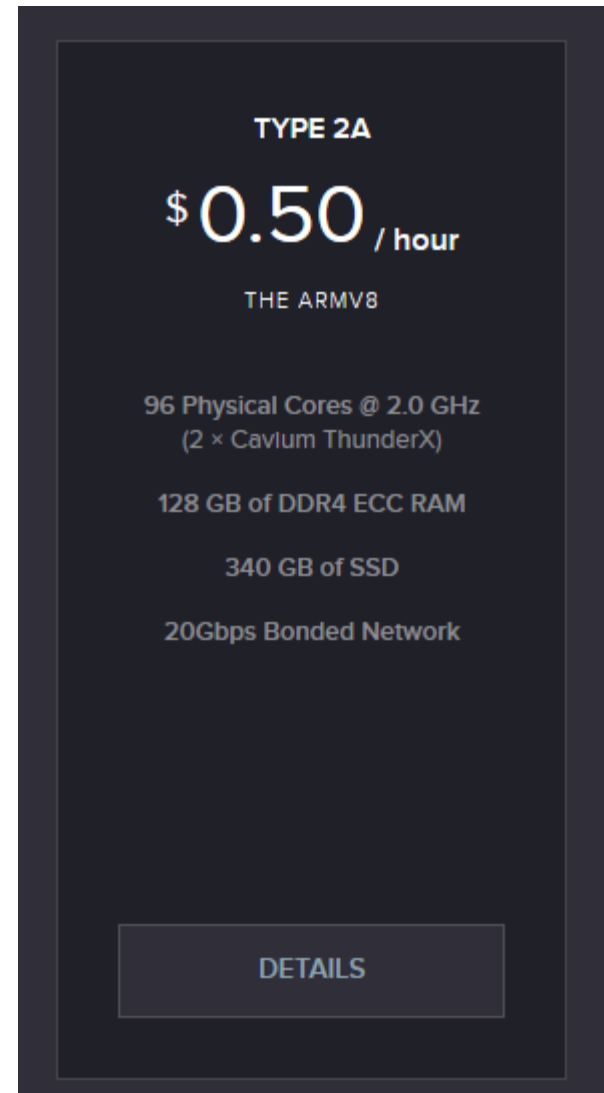
Step 2: Run on a real ARMv8 server

We used Packet.net, but others are available

- Chose a Cavium ThunderX
- Choose the OS:
Centos 7, Custom iPE, Ubuntu 16.04 LTS or 17.04
- Choose the location:
Amsterdam, Tokyo, Sunnyvale, Parsippany

We usually used Ubuntu 16.04, but the build worked on all of them.

It worked first time so was cheaper than a RaspberryPi!



TYPE 2A

\$0.50 / hour

THE ARMV8

96 Physical Cores @ 2.0 GHz
(2 × Cavium ThunderX)

128 GB of DDR4 ECC RAM

340 GB of SSD

20Gbps Bonded Network

DETAILS



I/O profiling: case studies

Performance issues caused by single-byte reads and writes

Without I/O profiling this can look CPU bound

Data being read or stored in the wrong place

Temporary files on shared storage

Hard coded dependencies

Missing libraries

Benchmarking

Time spent on I/O

Meta data performance

Read and write performance



Performance Ecosystem

Perform a one-off detailed migration and performance check with Breeze



Combine I/O profiling from Ellexus with data from Allinea MAP and other tools to hone in on wider problems



Integrate Mistral into your test infrastructure to prevent performance regression



Summary

Migrating to ARMv8 is really easy

The Eco-system is there and growing

Ellexus is just one of many vendors ready to help you

Let's work together to make ARM a viable choice for HPC

