
AWS
re:Invent
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CMP411-R

Learnings from developers who adopted AWS Graviton

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Arthur Petitpierre – Who am I?



2016–2019
Delivering snowballs – Paris

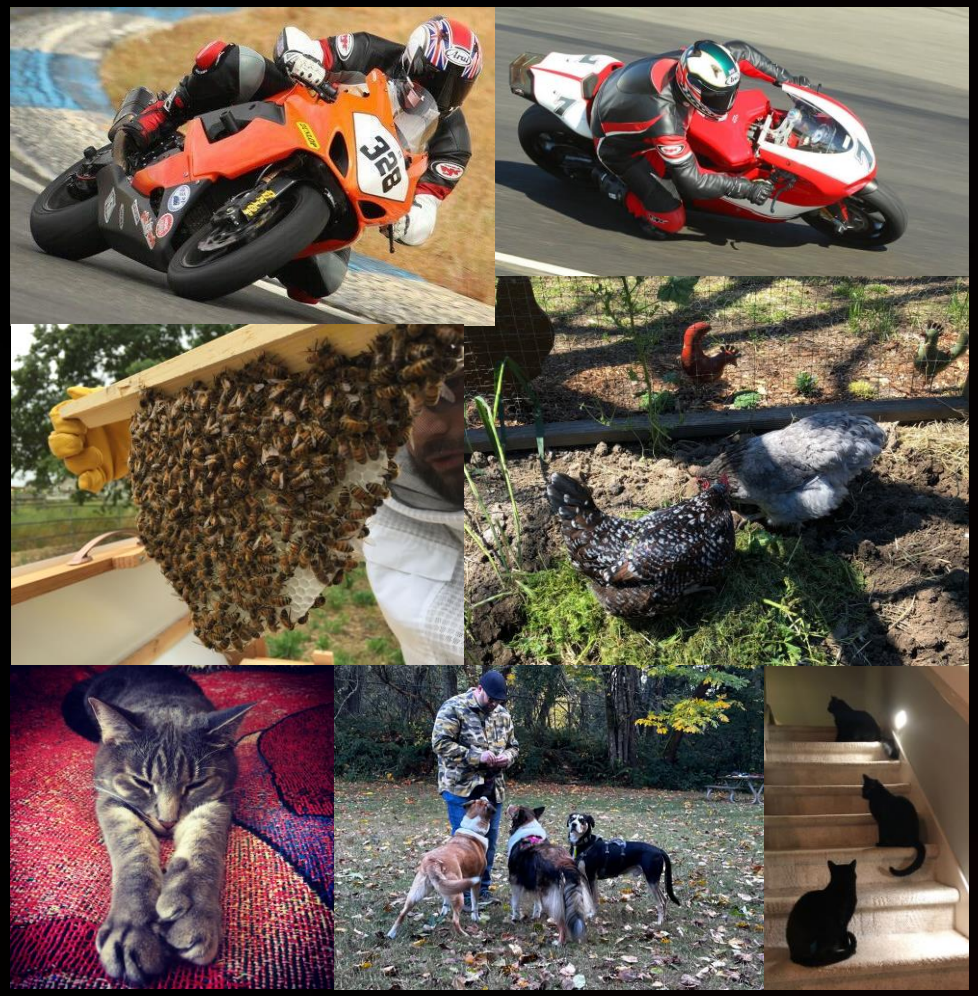


2019–today
Paddling for AWS Graviton – Seattle

But also
2015–2016: HPC Services CTO
2016–2019: AWS EMEA HPC Specialist SA
2019–today: AWS Graviton Specialist SA

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Jeff Underhill – Who am I?



I love motorcycles and animals ☺





2018–today
Go-to-market specialist for AWS Graviton – Seattle

But also
1988-2004: Software/Firmware Engineer
2004-2010: BD (embedded) & PM (HPC) @ AMD
2010–today: Arm for servers & cloud

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x86-64? Arm64? What are you talking about?

Interpreted / bytecode compiled: source → interpreter → machine code

Compiled: source → compiler → machine code

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Let’s see some code

```
int square(int num) {
    return num * num;
}
```

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And some assembly

x86-64 gcc-12.2.0

```
square(int):
push rbp
mov rbp  rsp
mov DWORD PTR  rbp 4  edi
mov eax  DWORD PTR  rbp 4
imul eax  eax
pop rbp
ret
```

arm64 gcc-12.2.0

```
square(int):
sub sp, sp, #16
str w0, [sp, 12]
ldr w0, [sp, 12]
mul w0, w0, w0
add sp, sp, 16
ret
```

https://godbolt.org/ is your best friend

aws

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How/when do you write something architecture-specific?

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Architecture-specific constructs

Endianness

Crypto

Random numbers

Data types

SIMD

Locks/mutexes

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How should I manage software dependencies?

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Do you remember when CentOS 7 was released?

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What about Java8?

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Software versions

CentOS 7: July 7, 2014

Java 8: January 14, 2014

Graviton2: re:Invent 2019

Graviton3: re:Invent 2021

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Old software isn’t optimized to run on AWS Graviton

…or x86 for that matter.

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Eliminating tech debt is good for both x86 and Graviton.

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Performance considerations

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Do you know exactly what your application bottlenecks are?

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Do you think you know, or have you measured them?

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AWS Graviton technical guide on GitHub

- This guide has been assembled by our Graviton team and is designed to help customers transition and optimize their applications
  https://github.com/aws/aws-graviton-getting-started

- It covers various languages and libraries and includes tips and tricks for each

- In general, using the latest versions of operating systems, compilers, and language runtimes provides access to the latest Arm64 improvements and optimizations

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Thank you!

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