Protean Code: Achieving Near-free Online Code Transformations for Warehouse Scale Computers

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Datacenter

Mobile

Desktop

Dynamism is everywhere

Apps begin and end

User behavior varies

Program phases

Unreliable hardware

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Native code should change with the environment

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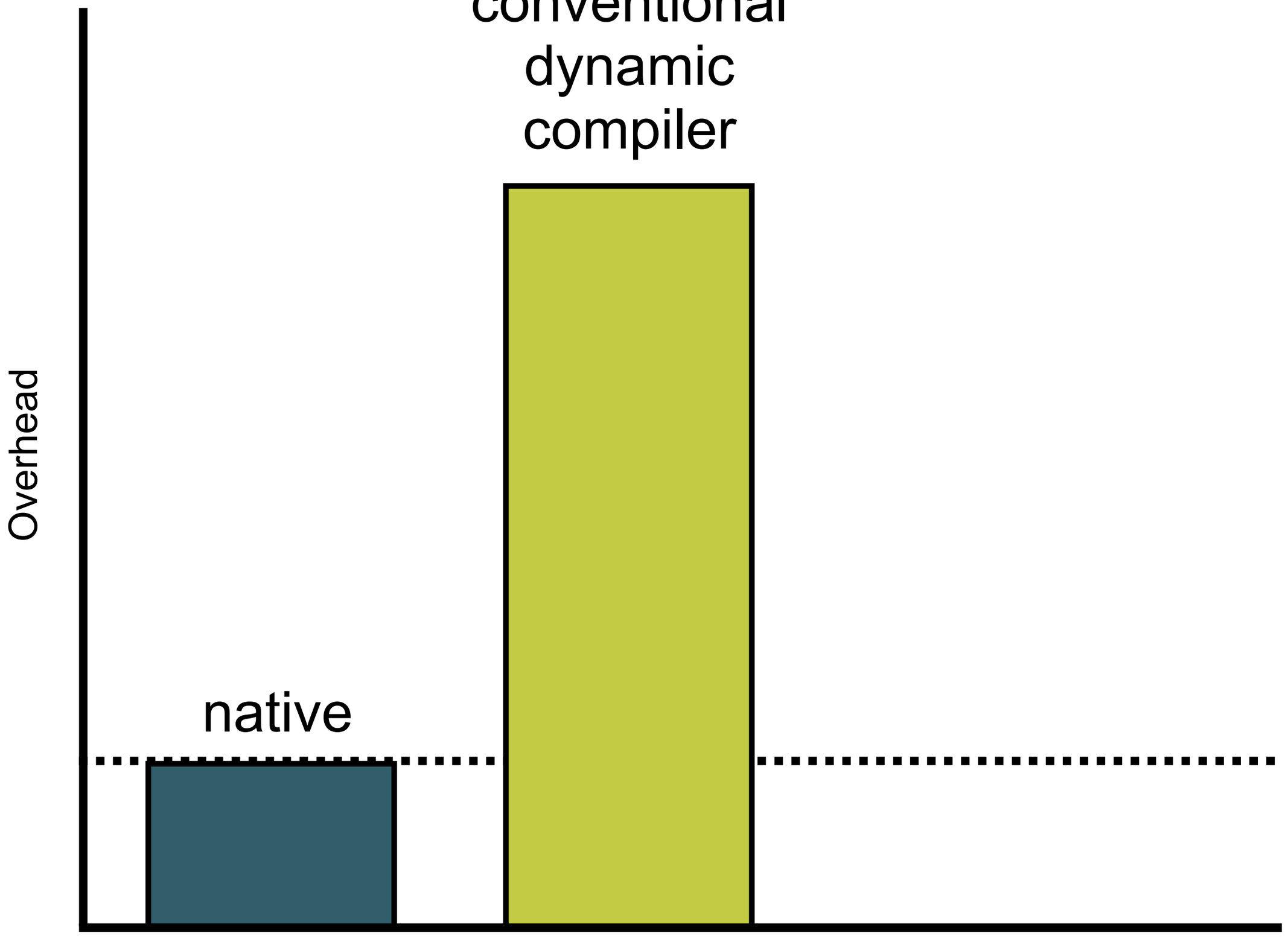
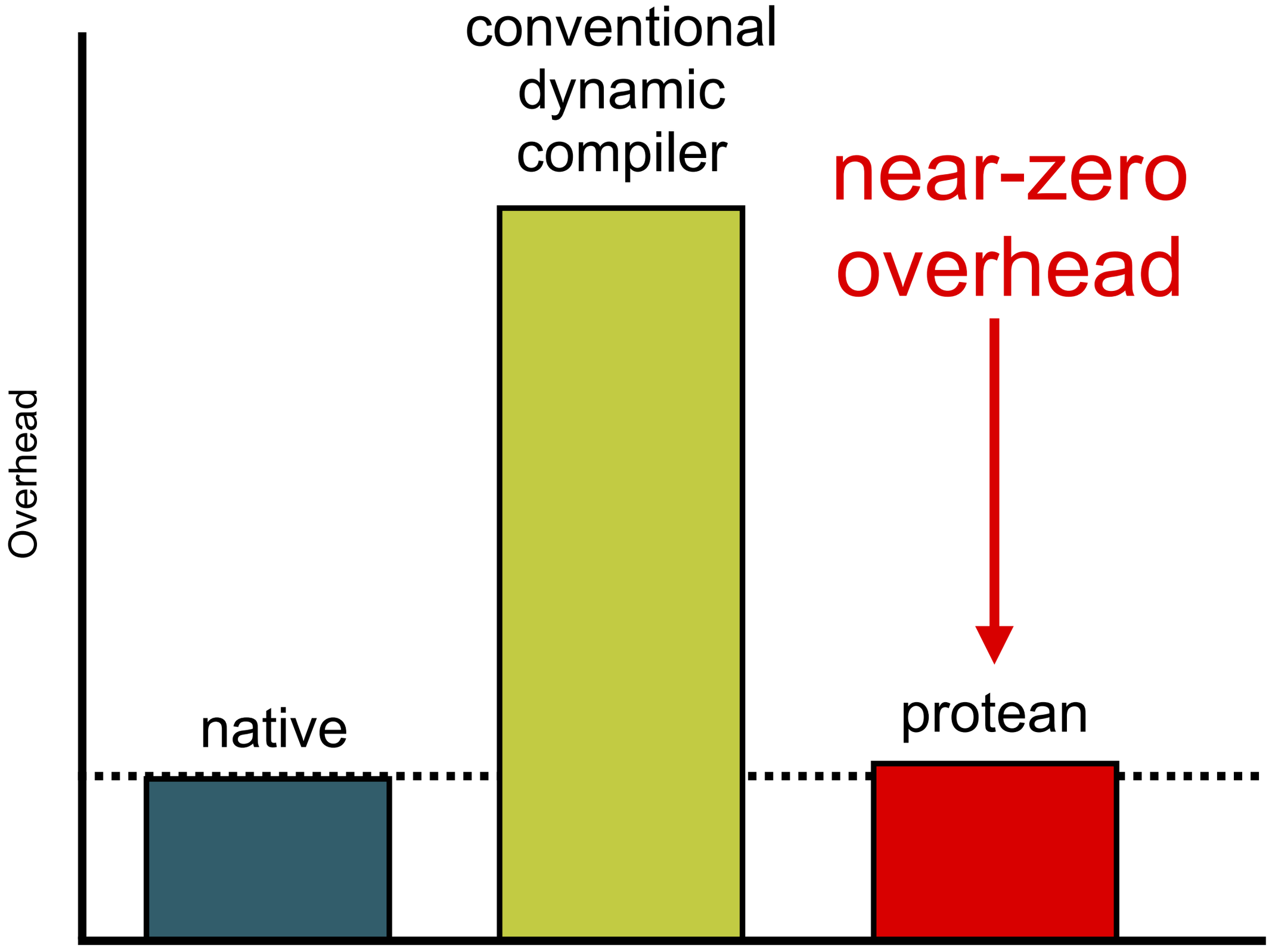
Native code should change with the environment

Not possible today in production environments


conventional
dynamic
compiler
native
Overhead


Overhead
conventional
dynamic
compiler
near-zero
overhead
native
protean

Protean code is a breakthrough

- Compilation is asynchronous with near-zero overhead
- Dynamic code optimization is always available
- Static compilation choices do not have to be permanent

Come to my talk to hear about

- A new paradigm for thinking about compilation
- A fully functional, open source dynamic compiler infrastructure implemented on top of LLVM
- A novel dynamic optimization that reduces the # of servers in the datacenter by > 25%

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Session 6B, Wednesday 1:00pm