How can we reproduce the external services crash to fix it? application JIT compiler JIT compiler platform P₁ platform P₂ compiler developer application owner

How to repeat the exact same sequence of compilation steps without needing to execute the application?

Reusing profiles and optimizing the same set of methods (such as in Jikes RVM):

to intercept VM access (such as in the J9 VM):

- X VM still not deterministic,
- must run the application.
- Instrumenting the compiler
- x unmaintable code.

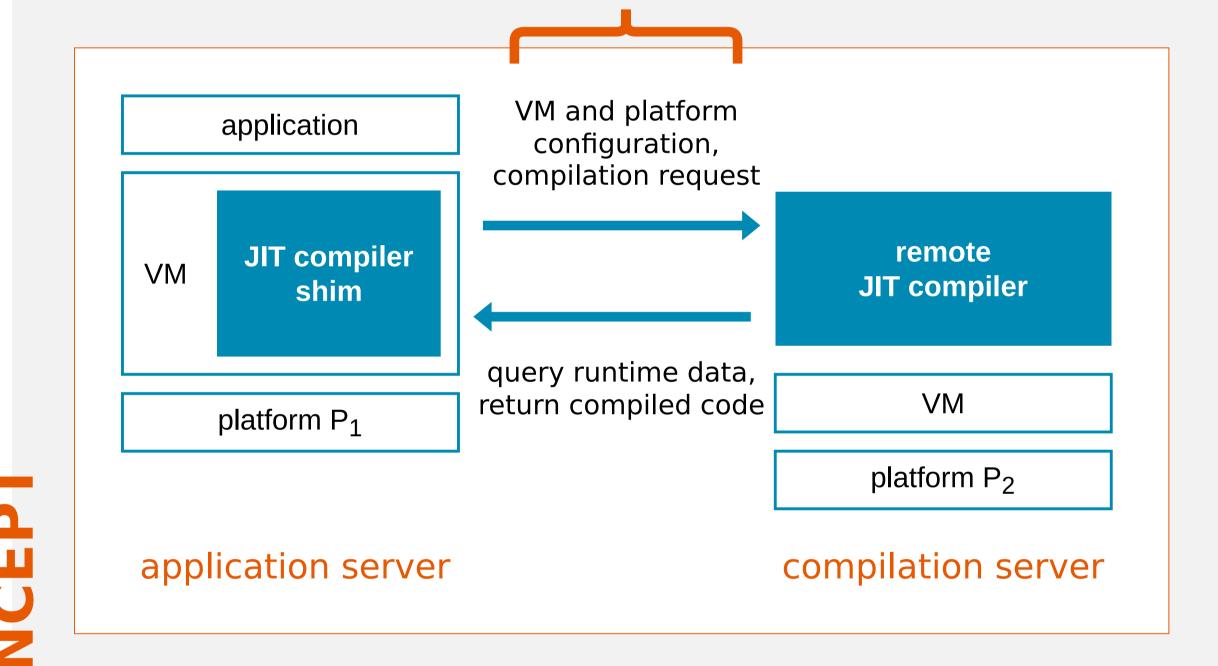
ACCURATE COMPILATION REPLAY VIA REMOTE JIT COMPILATION

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To enable replay, we record the configuration and all transmitted runtime data.



Remote JIT Compilation

- Decouples the compiler from the VM
- All inputs to the compiler are serializable.
- Already supported by many runtimes.
- Therefore, we can build replay compilation on top of it.
- For efficiency, we can run the remote compiler even on the same machine or VM.

00 Using the recorded data, a compiler developer can rerun just the compilation.

- Without needing to run the application.
- Replays the same steps even on a different platform.
- Pass extra diagnostic options to the compiler to resolve a problem.
- Compiler developers can run it with debugging tools they already know.

