



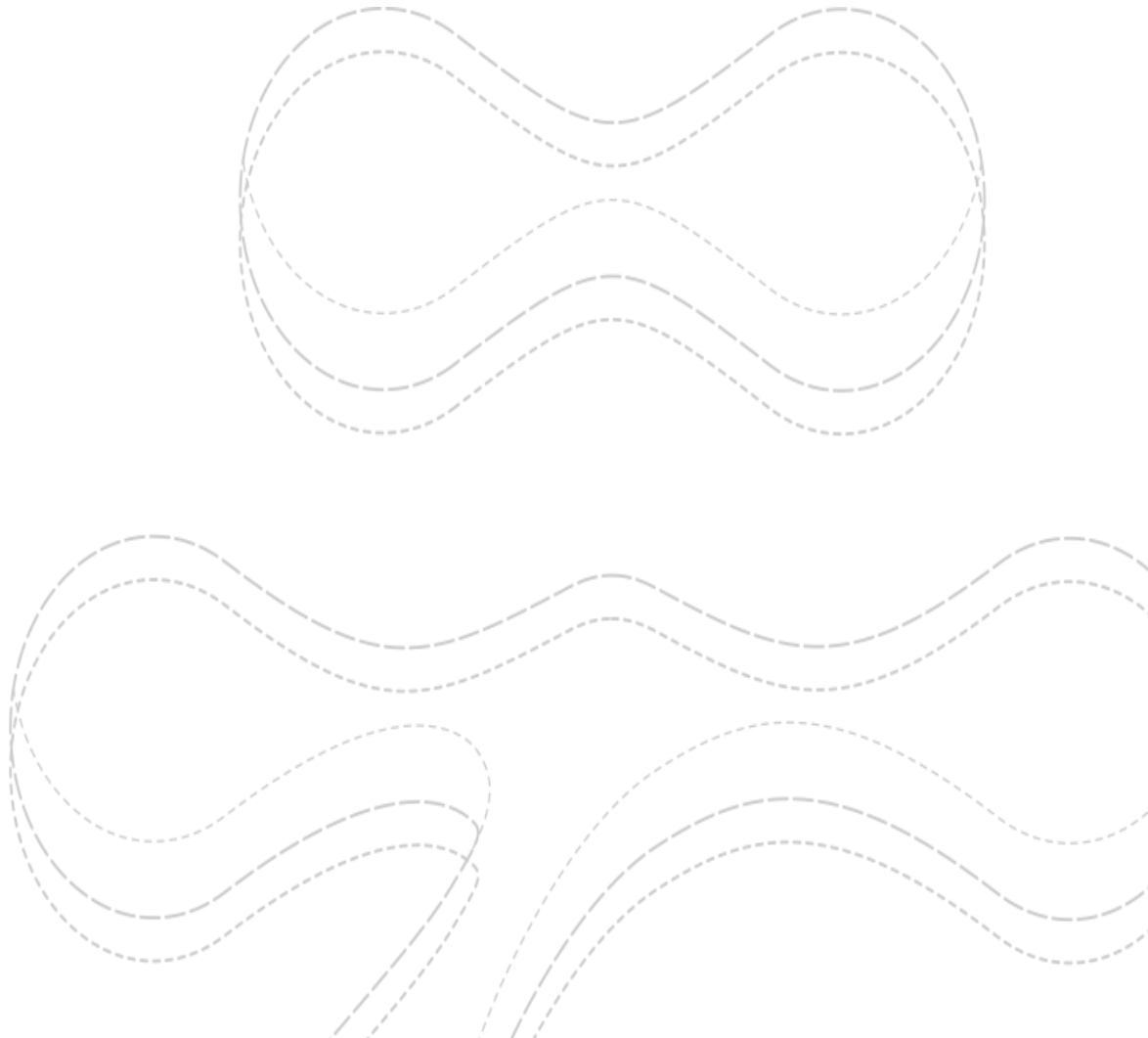
Java debugging: from desktop to cloud

陆 传胜
(@jonathan陆)

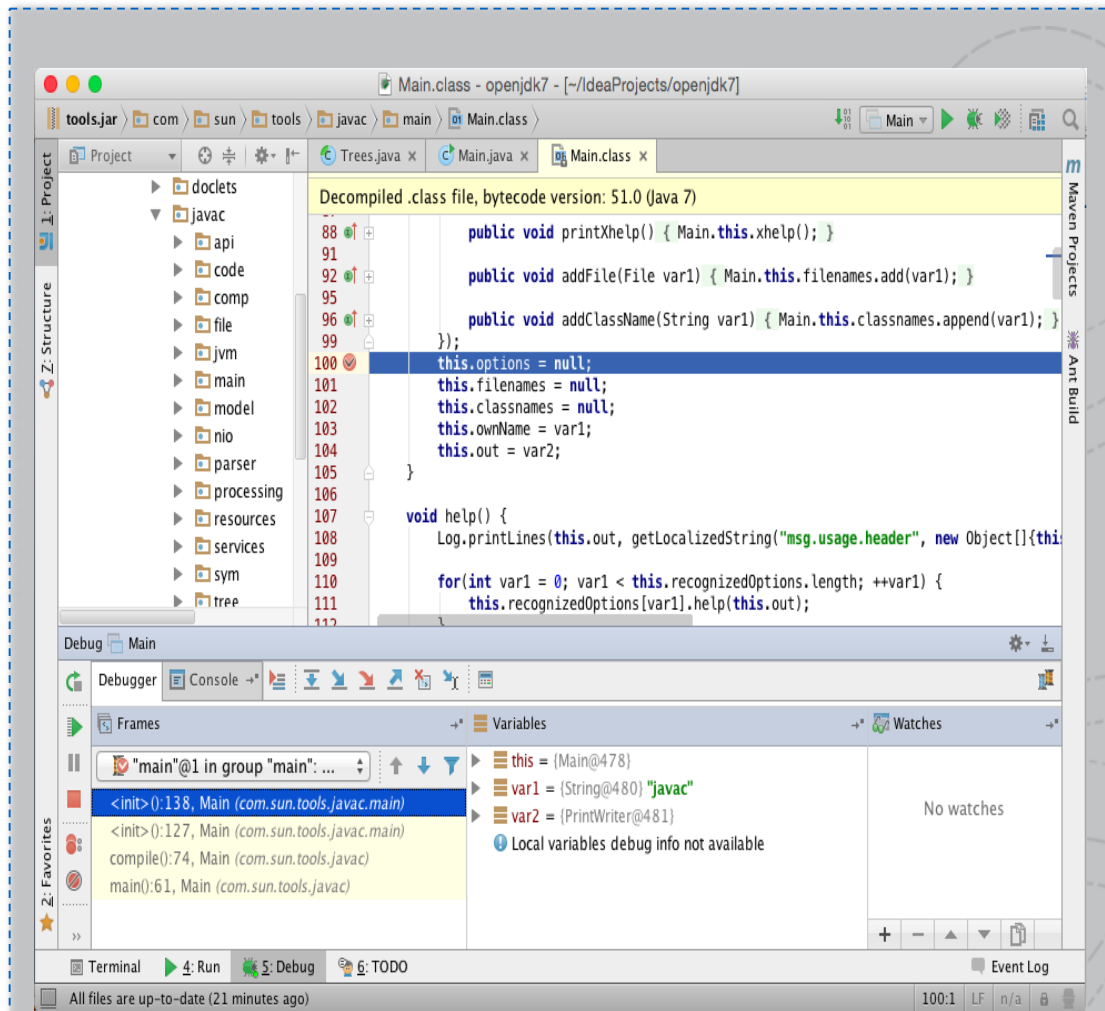
Agenda



- Daily debugging
- Behind the curtain
- Dance on cloud



Daily debugging



Ma Nong

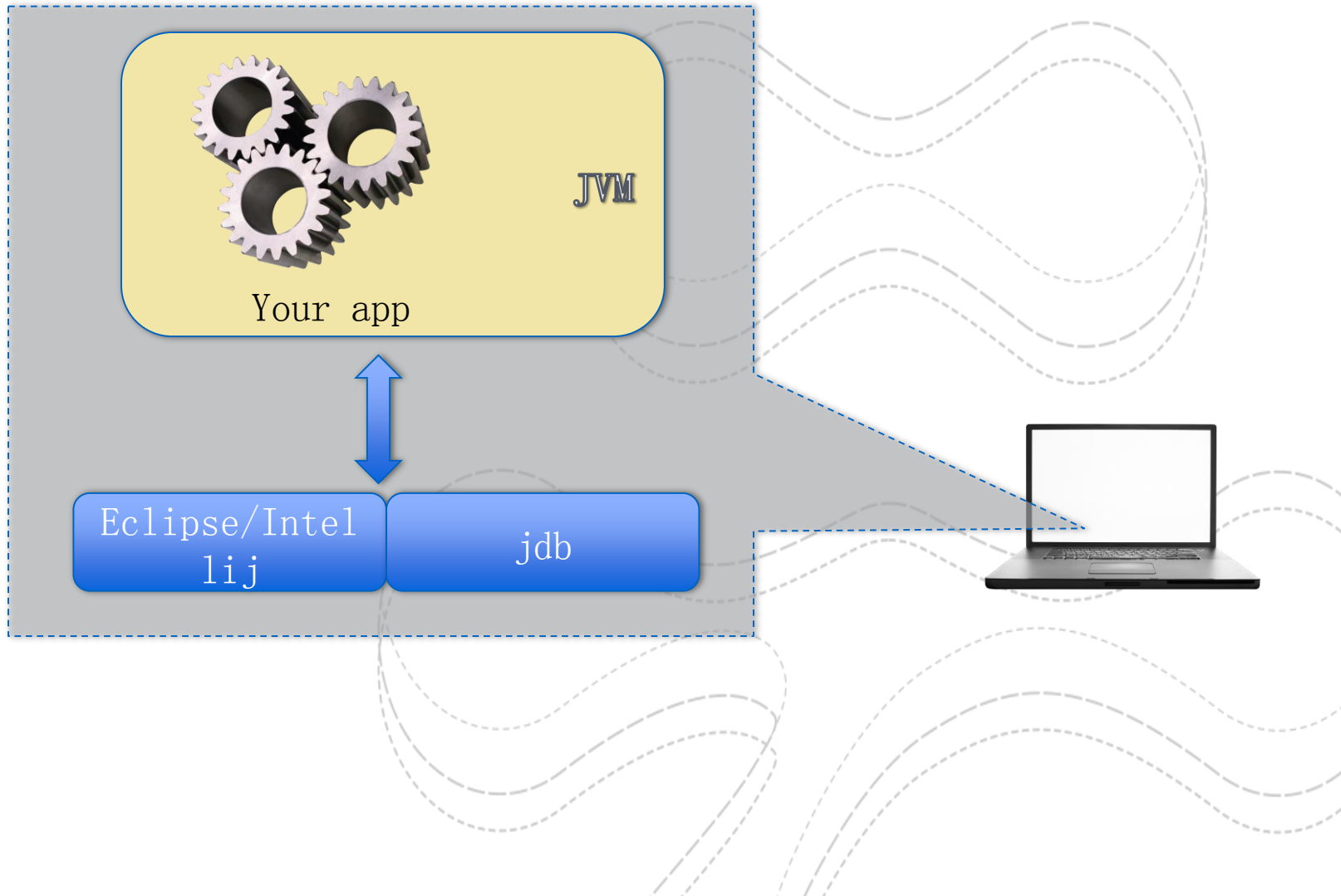


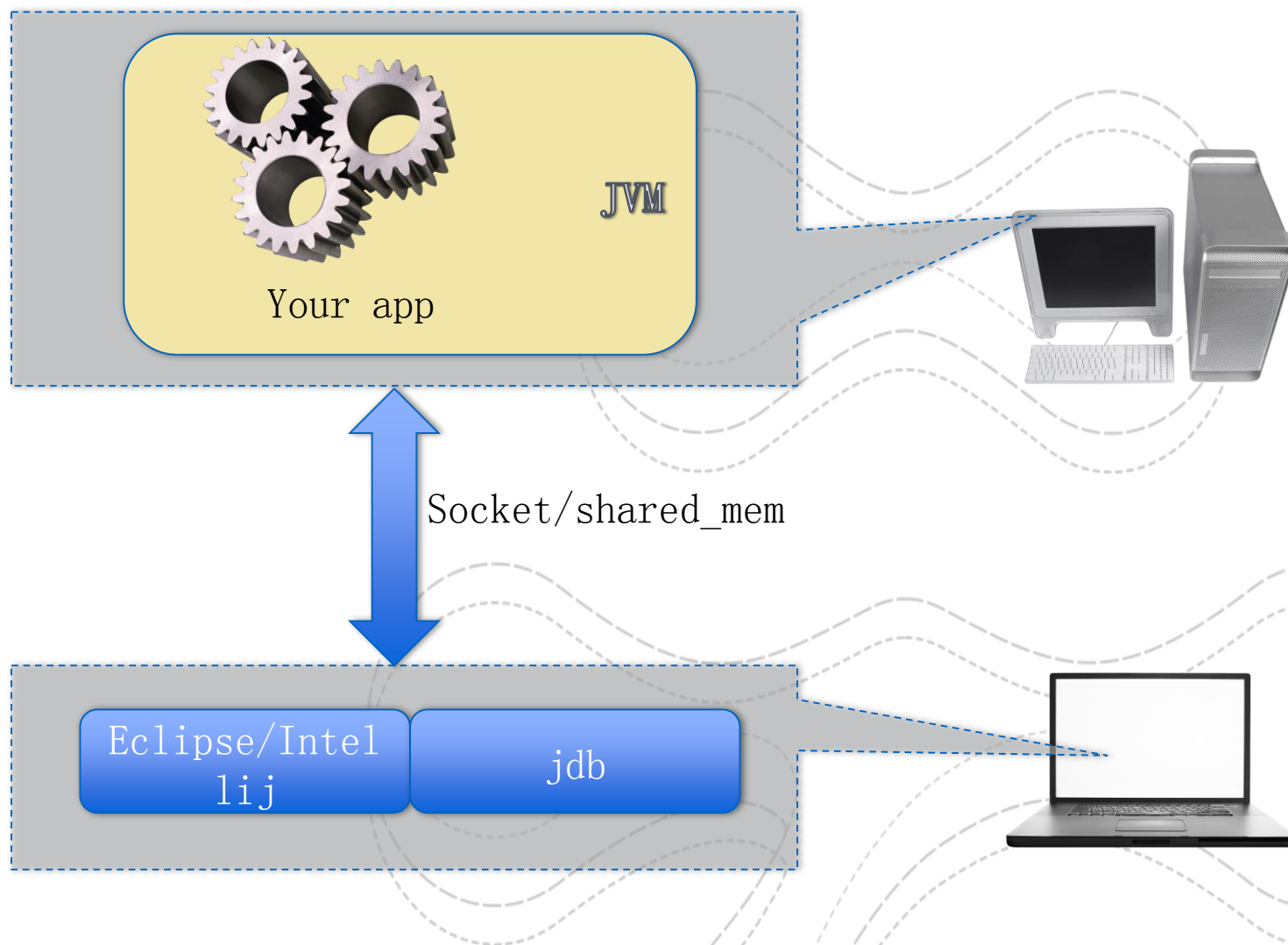
Tools



Your App

Scenarios of Java debugging

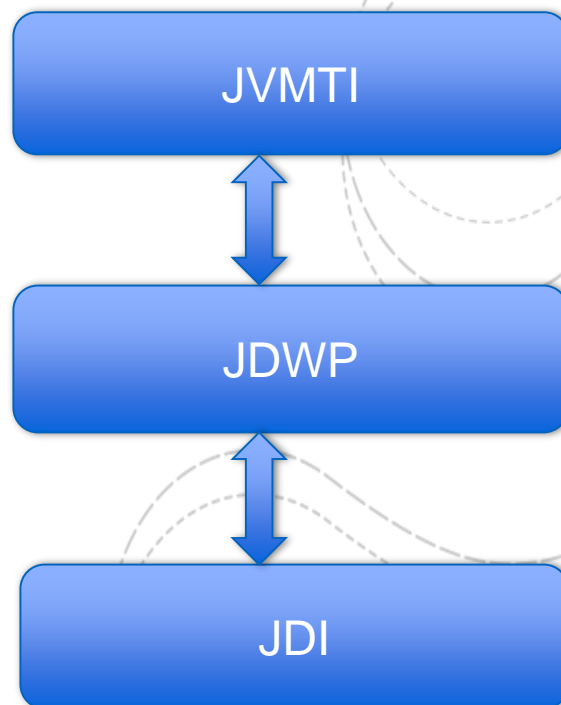




Specification behind the curtain

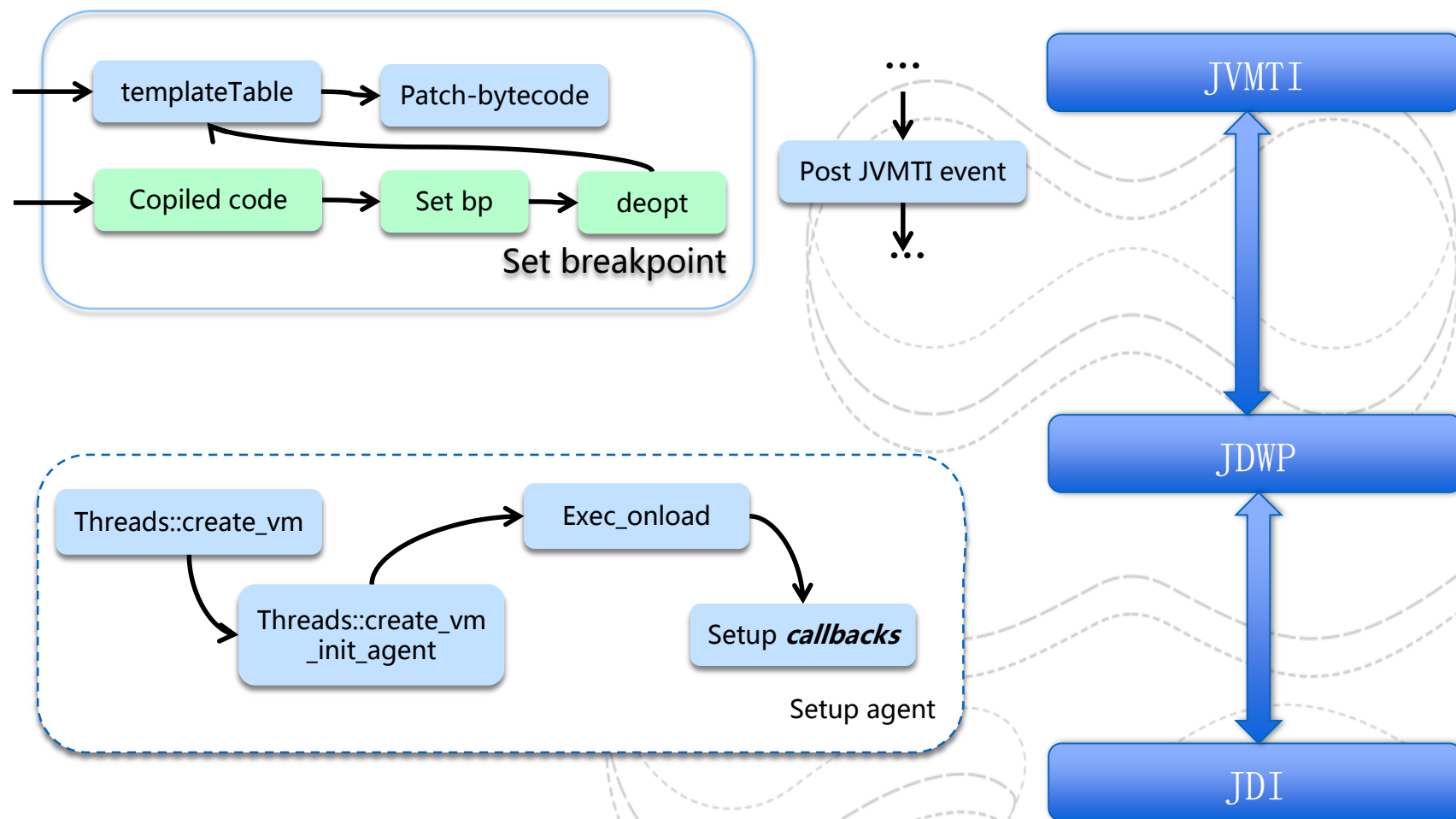


- Java Platform Debugging Architecture

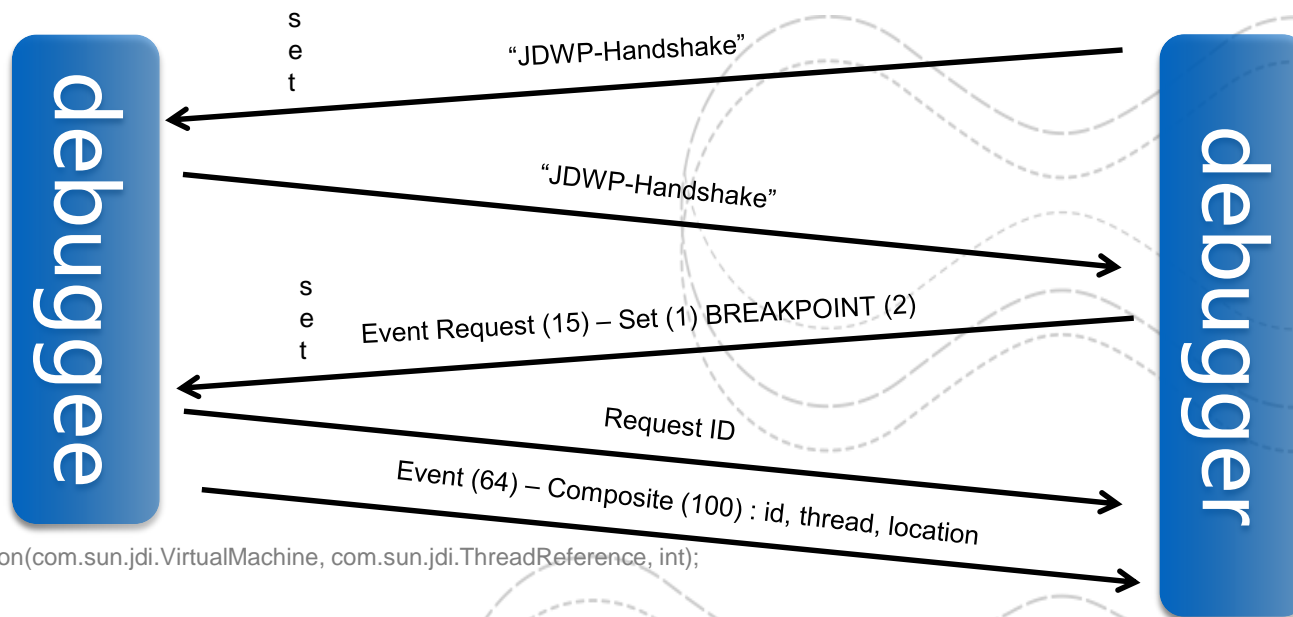


■ `agentlib:jdwp=transport=dt_socket,server=y,suspend=y,address=8888`

Implementation behind the curtain



The JDWP protocol



```
com.sun.tools.jdi.VMAction(com.sun.jdi.VirtualMachine, com.sun.jdi.ThreadReference, int);
```

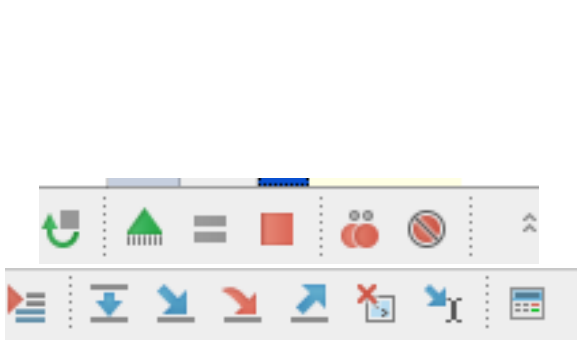
Code:

```
0: aload_0
1: aload_1
2: invokespecial #2
5: aload_0
6: iload_3
7: putfield    #3
10: aload_0
11: aload_2
12: putfield    #4
15: return
```

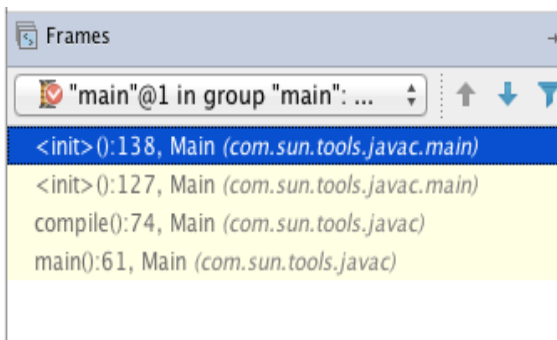
LineNumberTable:

```
line 50: 0
line 51: 5
line 52: 10
line 53: 15
```

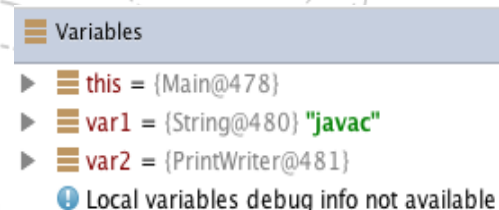

What do you actually want?



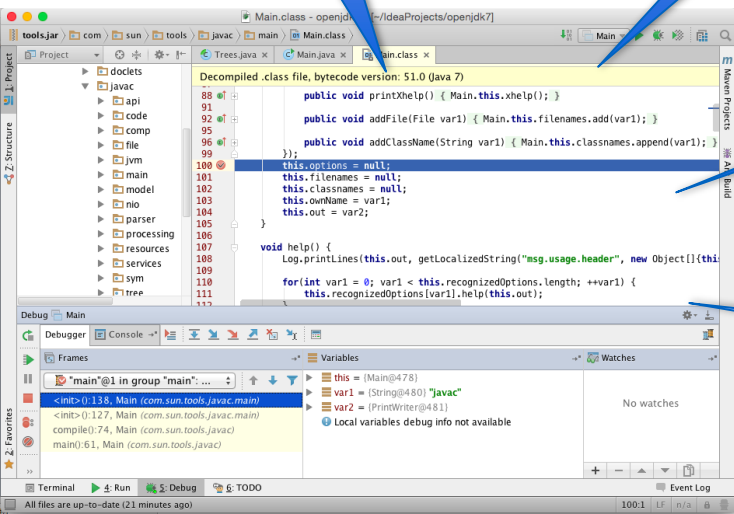
Control



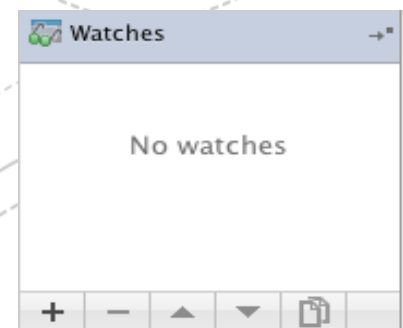
Stack



variables



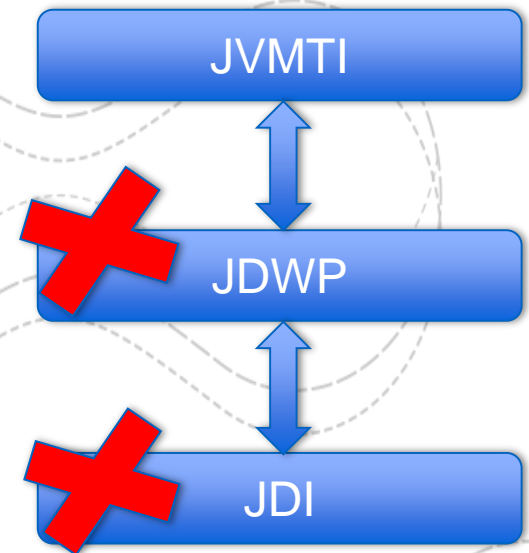
watch



How about



- Give you the freedom of debugging anywhere
- Without JDWP
- Without interface overhead



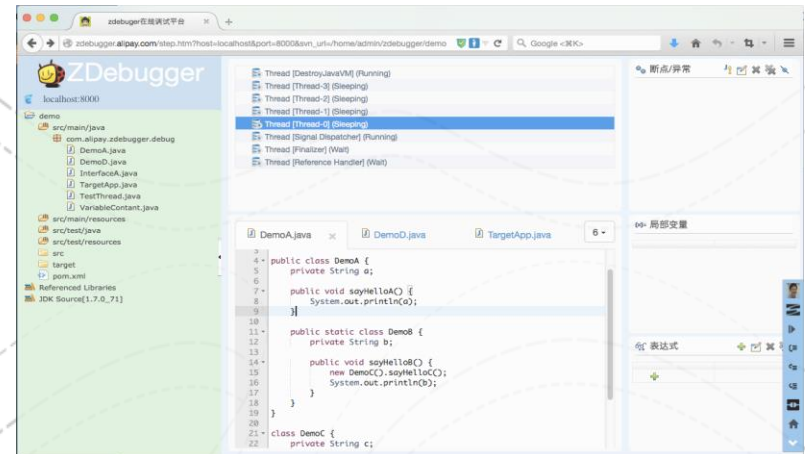


Dance on cloud

Introducing zDebugger



- Almost everything provided by Eclipse debugger, and more
 - Shortcuts, breakpoint, single step, view variables...
- And all in browser
 - Inspect production environment directly
 - Infinite debugging abilities



Adopted by Alibaba Financial Cloud



- Deploy once, debug “everywhere”
- Features
 - SVN/Git source code synchronization
 - Maven projects import
 - Local variables of every stack frame
 - Authentication
 - And

Late attach of JDWP agent



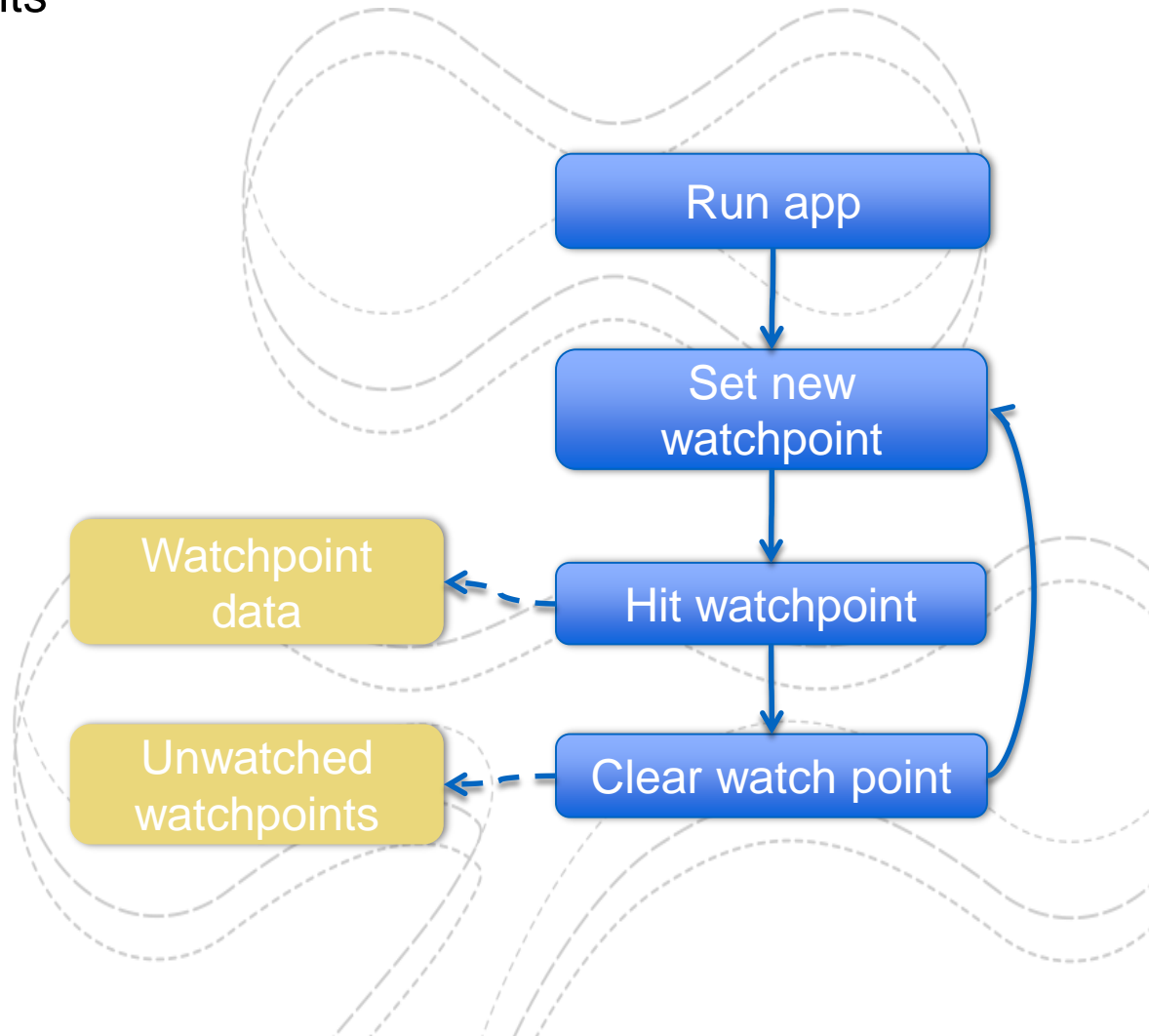
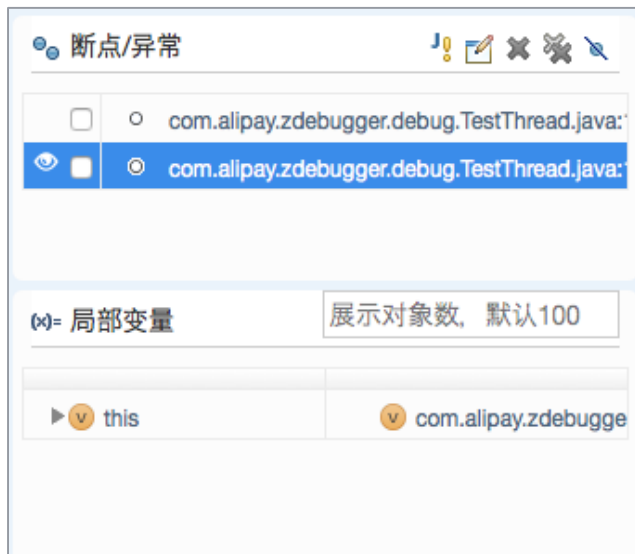
- No JDWP VM options any more
 - ~~-Xrunjdwp:transport=dt_socket,server=y,address=8888~~
- Attach and debug when JVM running
- JVM was modified to support late attach



Watch your App



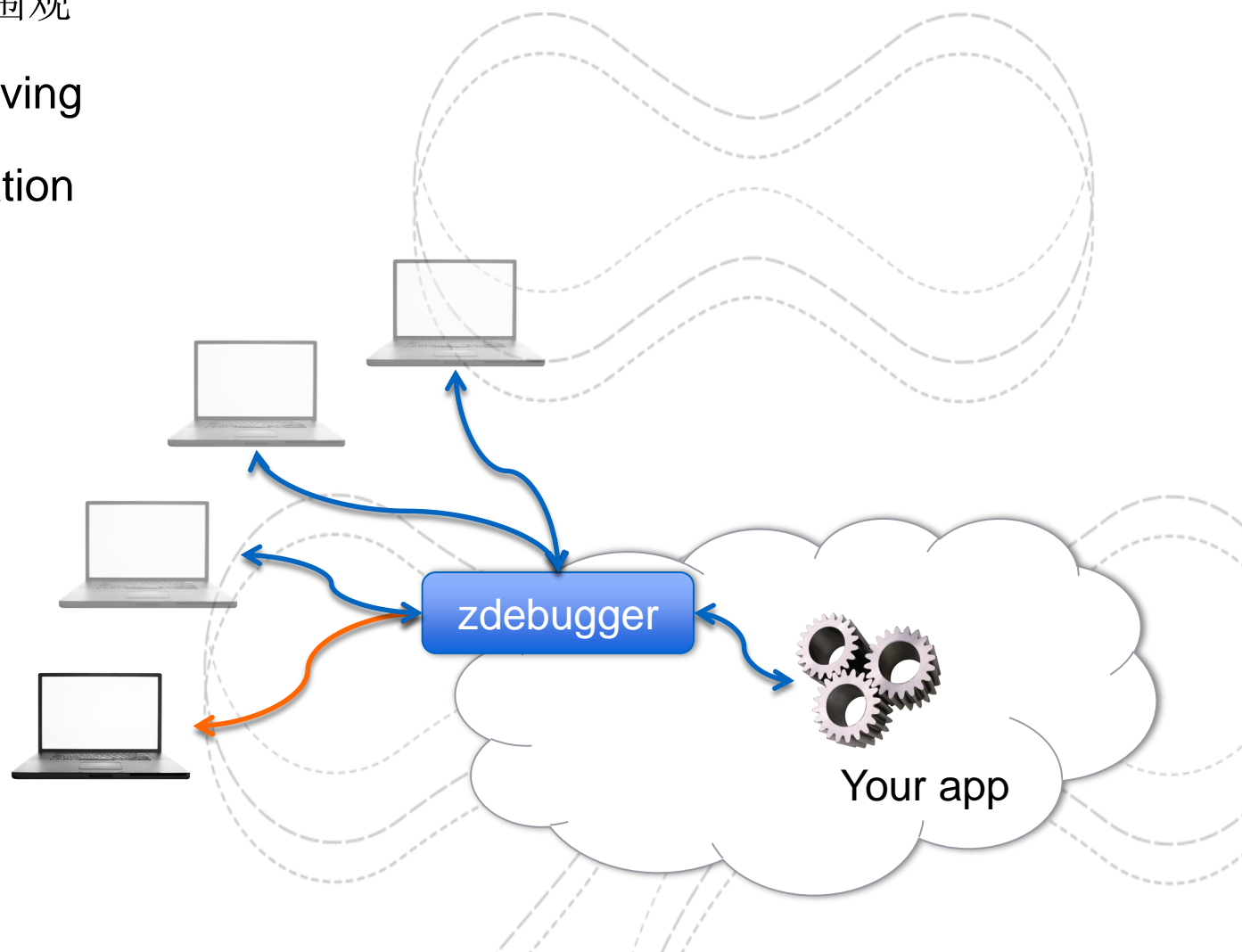
- Watchpoints VS breakpoints
- Uninterrupted inspection



Observer mode



- People love to “围观”
- Read-only observing
- Remote cooperation





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Thank you !