



the  
**POWER**  
of  
**JAVA™**



JavaOne  
Part of the World's Most Successful Software Conference

# Debugging Across Tiers Advanced Techniques

**Petr Suchomel, Martin Entlicher, Roman Ondruska**

NetBeans™ Technology Developers

Sun Microsystems

<http://debugger.netbeans.org>

TS-1878

Copyright © 2006, Sun Microsystems Inc., All rights reserved.

2006 JavaOne™ Conference | Session TS-1878 |

[java.sun.com/javaone/sf](http://java.sun.com/javaone/sf)

# Goal

## Overview of Advanced Debugging Techniques

Effective approach to debugging multi-tier  
Java™ technology-based applications  
using NetBeans™ IDE

# Agenda

Requirements on Modern Debuggers

Debugger Architecture

Covering the Tiers

Demos

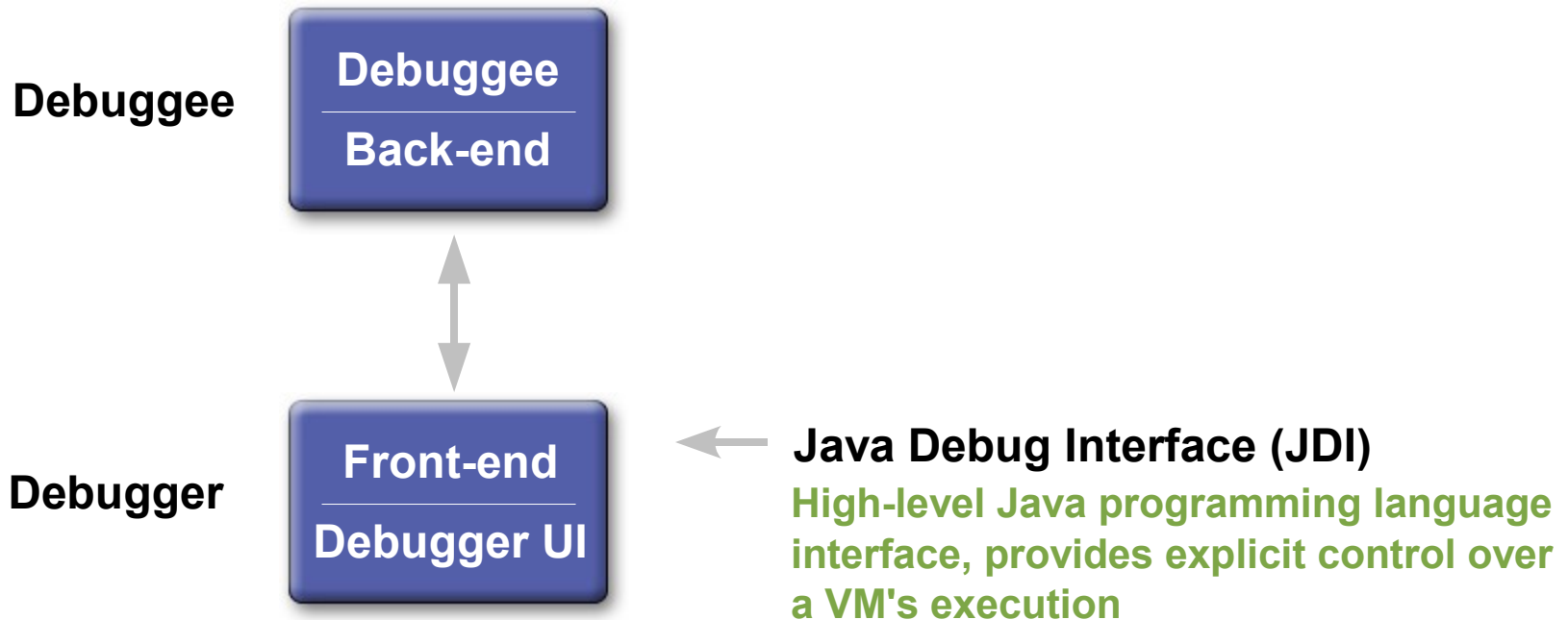
What Is Coming

# Requirements on Modern Debuggers

- Multi-session
- Multi-tier
- Multi-thread
- Remote debugging
- Hot code replacement (Fix and Continue)
- Memory profiling (Heap Browser)
- Expression evaluation

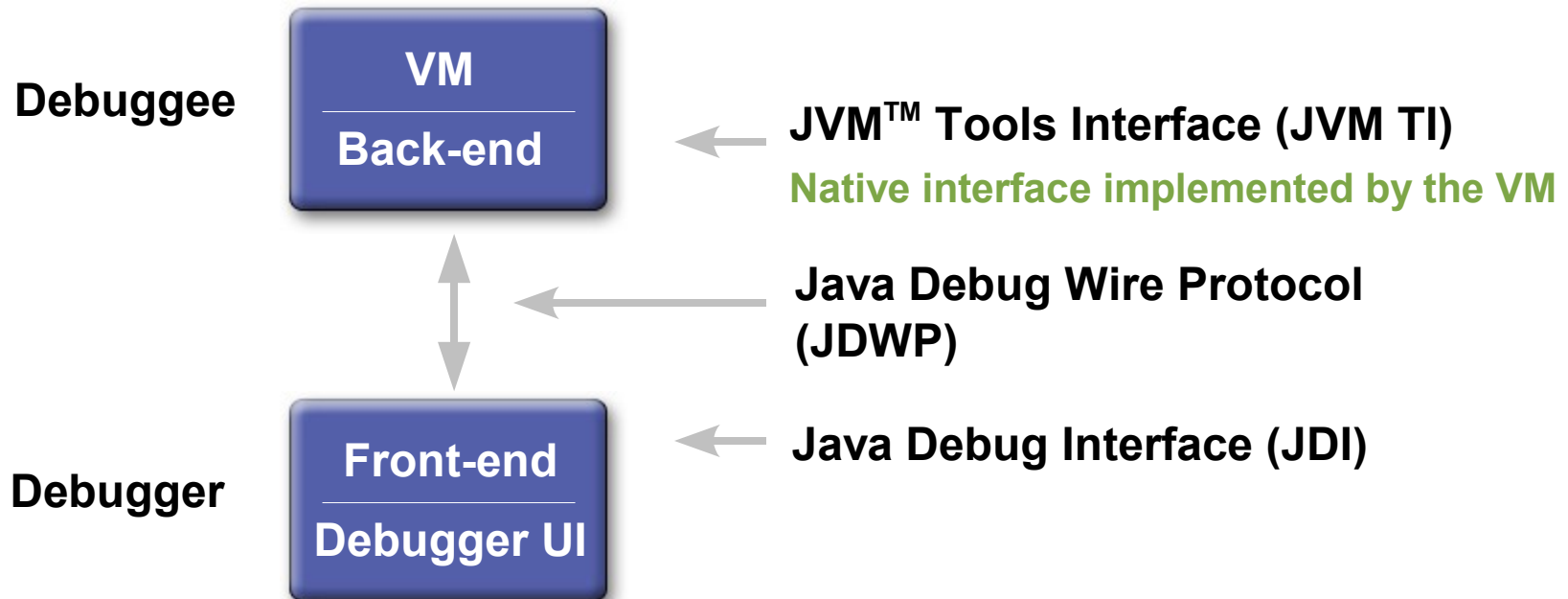
# Java Platform Debugger Architecture

High Level Java Technology API  
(Java Debug Interface (JDI))



# Java Platform Debugger Architecture

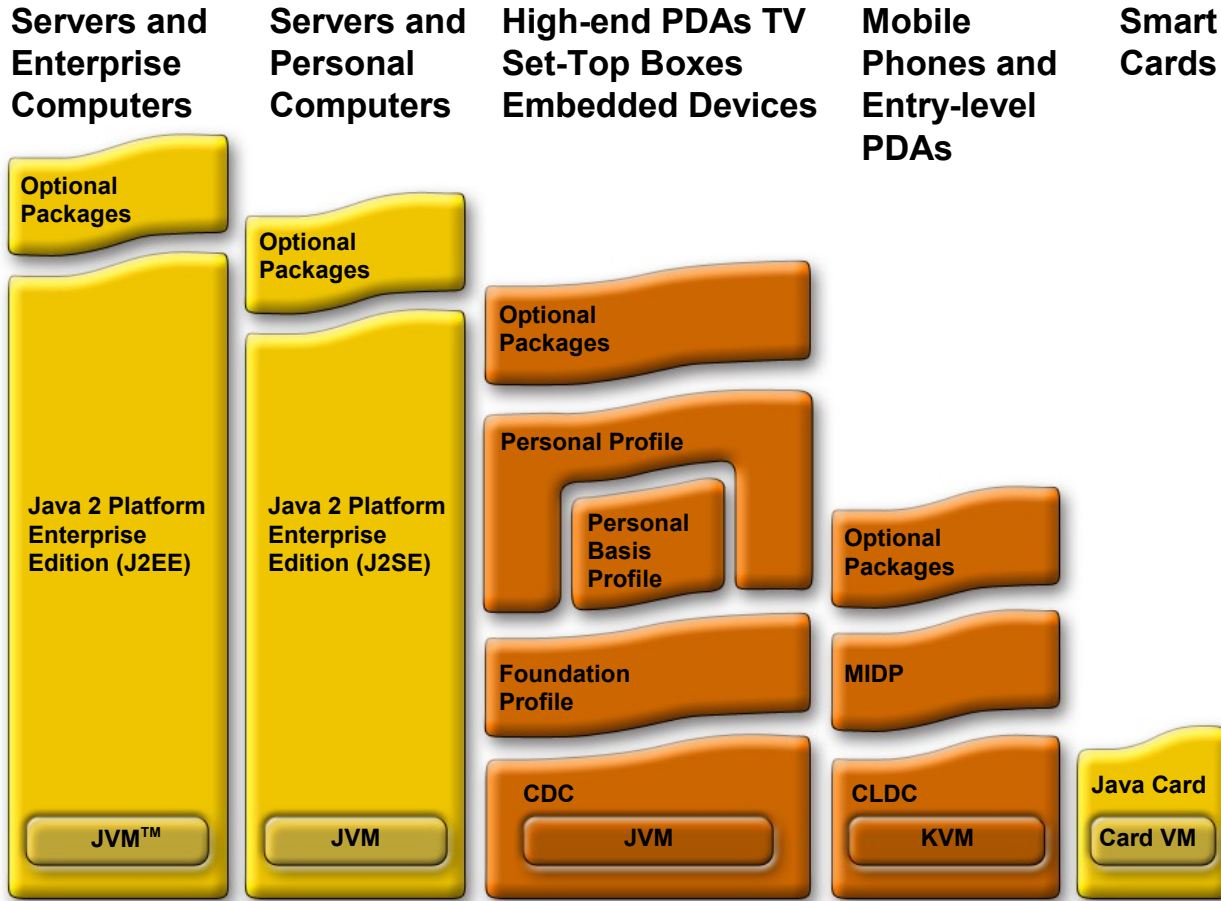
## Java Debug Wire Protocol (JDWP)



# NetBeans IDE Debugger Architecture



# Covering the Tiers



Covered by NetBeans Debugger



# DEMO

NetBeans IDE Debugger Overview  
Java SE and Java EE Platform  
Debugging

# Debugging Java ME Platform Space

## What is Different?

- NetBeans technology hides the variations
- Small VM's can not provide full information
  - Using protocol translation
  - Transparent to user
- Full testing infrastructure ensures consistency
- Some debugging options may not be supported
  - E.g.: Variable modification breakpoints

# Small Devices and On-Device Debugging

## Why Not on Real Device?

- Emulator can be different to real device
  - Performance
  - Networking
  - Storage speed
- On-Device Debugging helps
  - Developer debugs real device
  - Reflects real speed and phone setting—no emulation
  - Faster way to market

# DEMO

Small Devices and On-Device Debugging

# What Is Coming

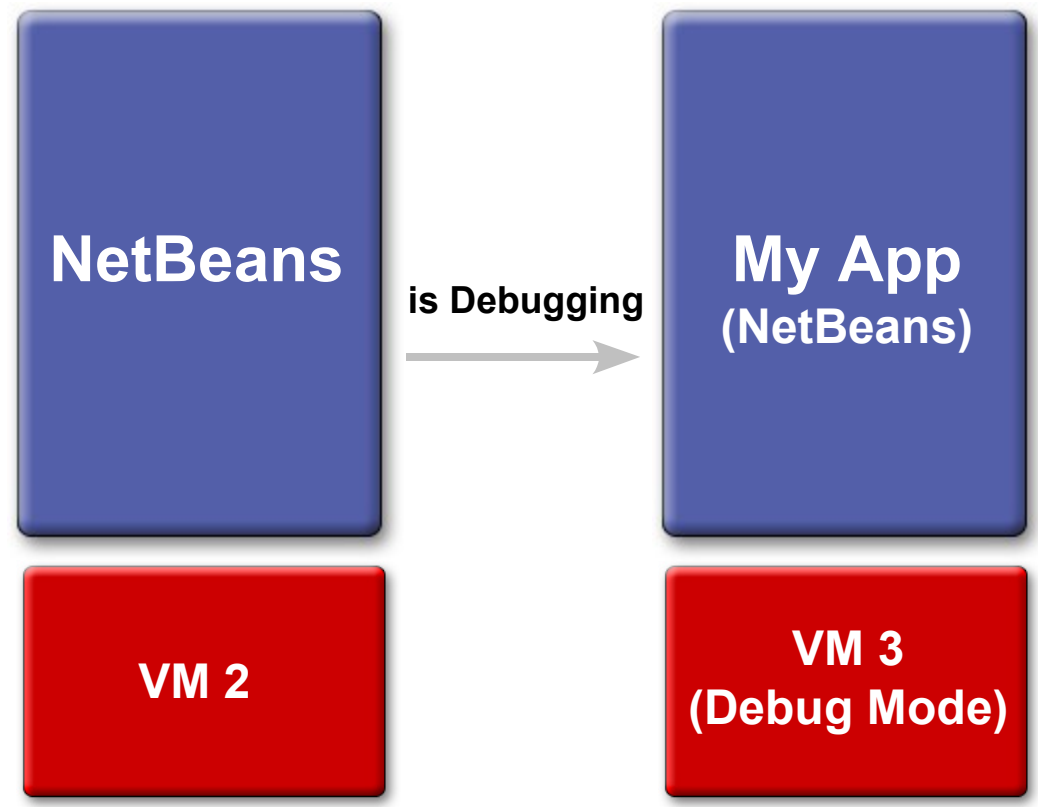
- Heap Browser—**back-reference tracing, instance counts**
- Integration of selected Profiler features
- Expression-level stepping—**step over an operation**
- Specialized Debugger editor—**a single view for debugged sources**

# Q&A

<code />

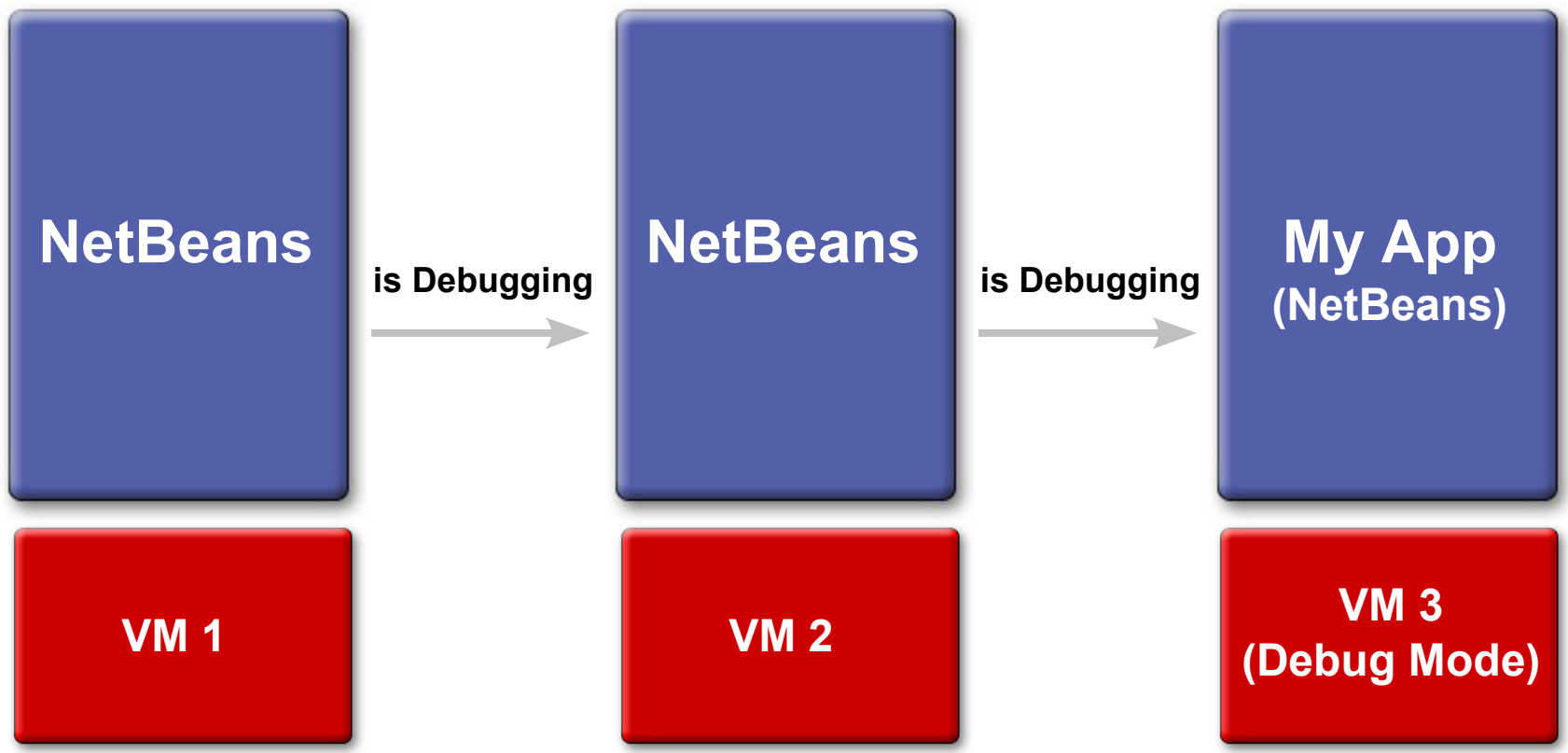
# Debugging NetBeans Debugger

## Solving Remote Debugging Issues



# Debugging NetBeans Debugger

## Solving Remote Debugging Issues







the  
**POWER**  
of  
**JAVA™**



JavaOne  
Part of the Network for Business Success

# Debugging Across Tiers Advanced Techniques

Your feedback is welcome!

<http://debugger.netbeans.org>  
[feedback@debugger.netbeans.org](mailto:feedback@debugger.netbeans.org)

TS-1878