

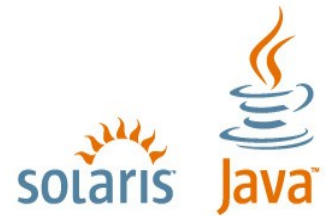


Java SE Language Features : Today and Tomorrow

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UNLOCK
OPPORTUNITY

What will you open?



SUN TECH DAYS 2006-2007
A Worldwide Developer Conference

Agenda

- Java SE 로드맵
- Mustang (Java SE 6) 신기능
- 참고자료

Java SE 로드맵



2002 2003 2004 2005 2006 2007 2008

↑
J2SE 1.4
“Merlin”

↑
J2SE 5
“Tiger”

↑
Java SE 6
“Mustang”
↑
EOL
J2SE 1.3.1

↑
Java SE 7
“Dolphin”
↑
Microsoft
EOL
MSJVM

Java SE Release 계획

1.4.0	Merlin	2002/2/13
1.4.1	Hopper	2002/10/16
1.4.2	Mantis	2003/5/29
5.0	Java SE 5	2004/9/30
6	Java SE 6	2006/12
7	Java SE 7	2008

5.1, 6.1, ... 와 같은 하위 버전은 없애고,
매 8-16주 마다 업데이트 Release (ex: 5.0u11)

잠시 복습...

JMX™ BigDecimal z-ordering jstat
RMI dynamic proxies updates Generics Gnome Skins jps
JDBC™ Rowsets Autoboxing extended for loop
faster startup jconsole printf JVM™ sharing
synth L&F SAX 2.0 Concurrency utilities
Unicode Surrogates importing constants OpenGL
IP reachability Ocean L&F SASL performance XAWT
unsynchronized StringBuffer apt DOM 3 improved cookie support
XML Schema fatal error handlers JVM Monitoring
Stack trace API Remote JMX improved footprint
varargs swing printing AMD64 Enumerated types
XDnD Packed JARs metadata OCSP
scanning JVMPI Profiling
performance ergonomics

Java SE 5 (Tiger) 7가지 주요기능

- Generics
- Autoboxing/Unboxing
- Enhanced for loop (“foreach”)
- Type-safe enumerations
- Varargs
- Static import
- Metadata

자, 연습해 보자!

Compiler API

Longhorn Look & Feel

Splash screens

Split Verifier

Windows system tray

JTable upgrades

Unicode Normalizer

Attach on demand

chmod

Services

Parallelize Concurrent GC

JConsole upgrades

Core JVM

SwingWorker

Annotation processor

performance

Parallel old-space GC

Web Services Stack

Password prompting

JVM DTrace

Docs in JDBC 4.0

GroupLayout

LCD fonts

Chinese

More gfx acceleration

Faster JNI

JAXB 2.0

Free disk space

JVM & CLR Co-Existence

Improved OOM diagnosability

Firefox support

Pluggable Locales

More desktop

Integration

Scripting Languages

Native L&F Fidelity

More GC Ergonomics

XAWT

HTTP cookie manager

Improved text rendering

JavaScript™ engine

XML digital signatures

Java SE? JDK?

Top Ten 목록

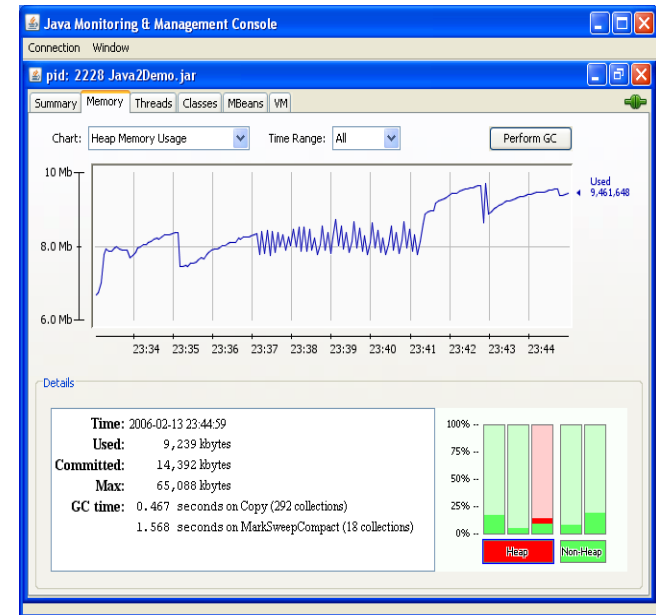
태그 → Mustang 좋아해

10. Attach-on-demand monitoring
9. JConsole plugin API
8. jhat OQL (jmap for heap dump)
7. Solaris™ Dynamic Tracing (DTrace) support
6. Annotation processing done by javac
5. Class-path wildcards
4. Free disk-space API
3. Password prompting
2. javax.swing.GroupLayout
1. JAX-WS : web services client

Java SE 6 신기능

태그 → 모니터링, 관리, 진단 막강해

- GUI 툴: JConsole, jhat, VisualGC (NetBeans), dynamic attach
- 커맨드 라인 툴: jps, jstat, jstack, jmap, jinfo
- 진단: CTRL-Break handler, heap dump, better OutOfMemoryError and fatal error handling, JNI crashes
- 추적/로깅: VM tracing and HotSpot probes, DTrace integration



Java SE 6 신기능

태그 → Out Of Memory 어딘지 알아

```
public class Chew {
    static void chew() {
        List<Object> ls = new ArrayList<Object>();
        for (;;)
            ls.add(new byte[1 << 20]);
    }
    public static void main(String[] args) {
        chew();
    }
}
```

Java SE 6 이전

% java Chew

Exception java.lang.OutOfMemoryError: Java heap space

실행

Java SE 6 부터

% java Chew

Exception java.lang.OutOfMemoryError: Java heap space

at X.chew(X.java:189)

at X.main(X.java:193)

Java SE 6 신기능

태그 → 남아있는 디스크 공간 체크

```
void safeCopy(File src, File dstDir)
    throws IOException {
    if (src.length() > dstDir.getUsableSpace())
        throw new IOException("Insufficient space");
    doCopy(src, new File(dstDir.getParent(),
        src.getName()));
}
```

```
void df(File dir) {
    out.format("Total MB Used Free Use%%%\n");
    long t = dir.getTotalSpace();
    long f = dir.getFreeSpace();
    out.format(" %6d %6d %6d %2d%%%\n",
        t >> 20,
        (t - f) >> 20,
        f >> 20,
        ((t - f) * 100) / t);
}
```

실행

```
%java df /a
```

Total MB	Used	Free	Use%
32766	28632	4134	87%

Java SE 6 신기능



클래스 패스 와일드카드

Java SE 6 이전

```
% javac -cp ../jaxb/lib/jaxb-api.jar\  
../jaxb/lib/jaxb-impl.jar\  
../jaxb/lib/jsr173_1.0_api.jar\  
../jaxb/lib/activation.jar \  
Sum.java
```

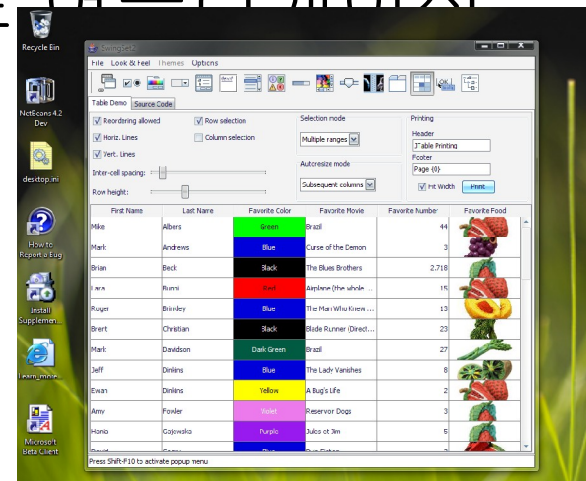
Java SE 6 부터

```
% javac -cp '../jaxb/lib/*.jar' Sum.java
```

Java SE 6 신기능

태그 → 데스크탑 지원 막강해

- splashscreens, tray icon, toolbars, application launching 등
- 브라우저를 통해 보다 쉬운 JRE 배포, JNLP launching
- 디폴트 브라우저, 디폴트 email client, file open/edit/print 등 관련 디폴트 어플리케이션 launching
- java.awt.Desktop API



Java SE 6 신기능

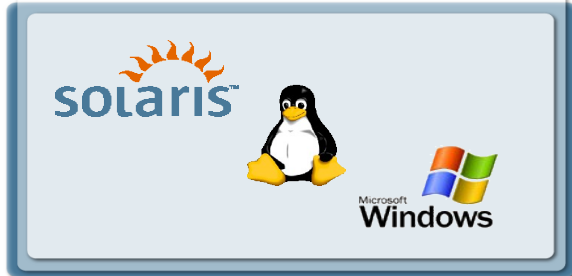
태그 → EoD 여전해

- Script 언어 지원
 - “Rhino” (JavaScript engine)
 - *Phobos project(server-side scripting)
- Compiler APIs – 코딩으로 컴파일 가능
- Pluggable annotations
- JDBC 4.0

<http://weblogs.java.net/blog/lancea/>

Java SE 6 신기능

태그 스크립트 좋아해



Native Scripting

The Community does Both...



Java Virtual Machine

Living the Java Lifestyle...



Web

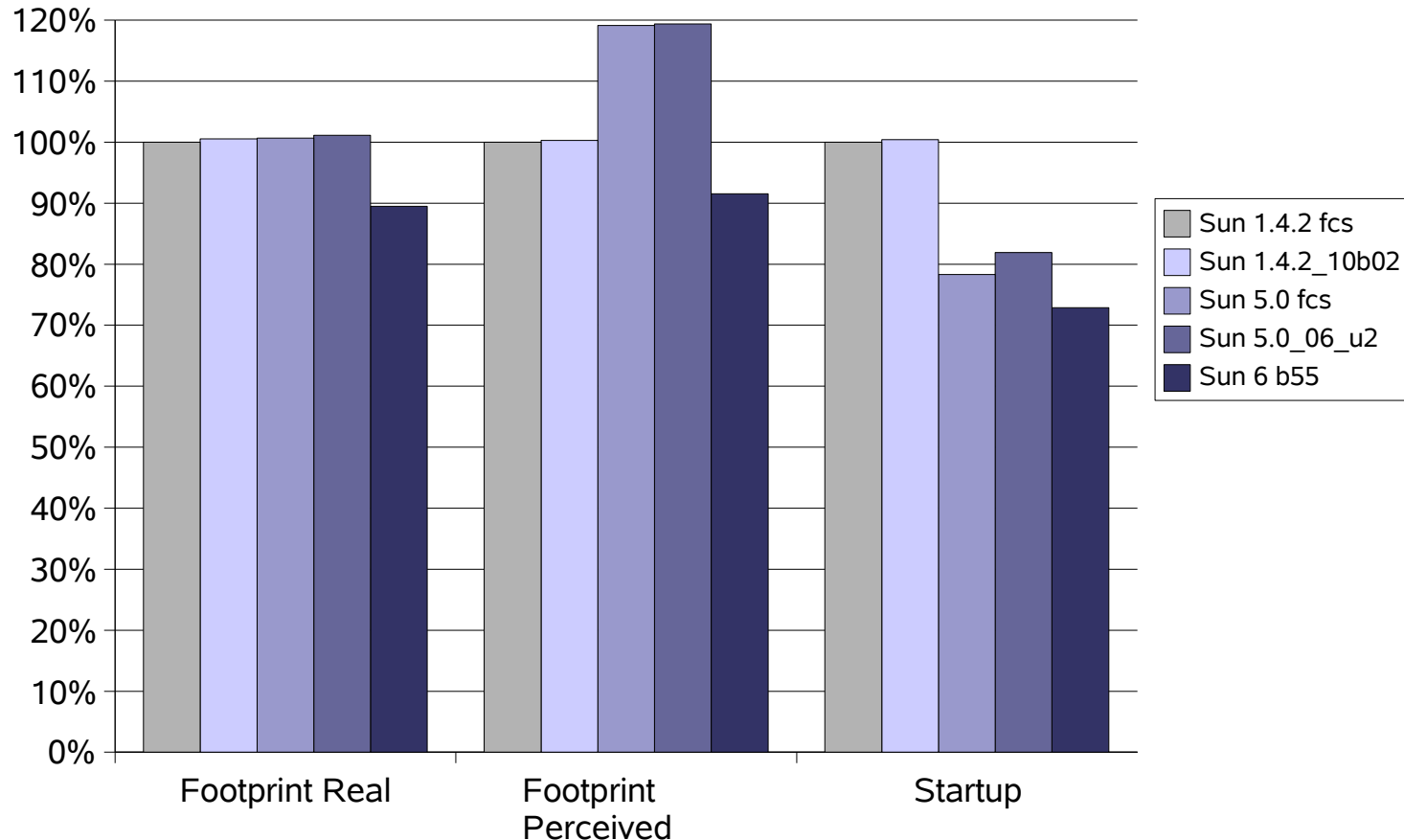
Leverage the VM

= You do = We do

Java SE 6 신기능

태그 → 성능은 어때

Desktop Performance: Startup and Footprint



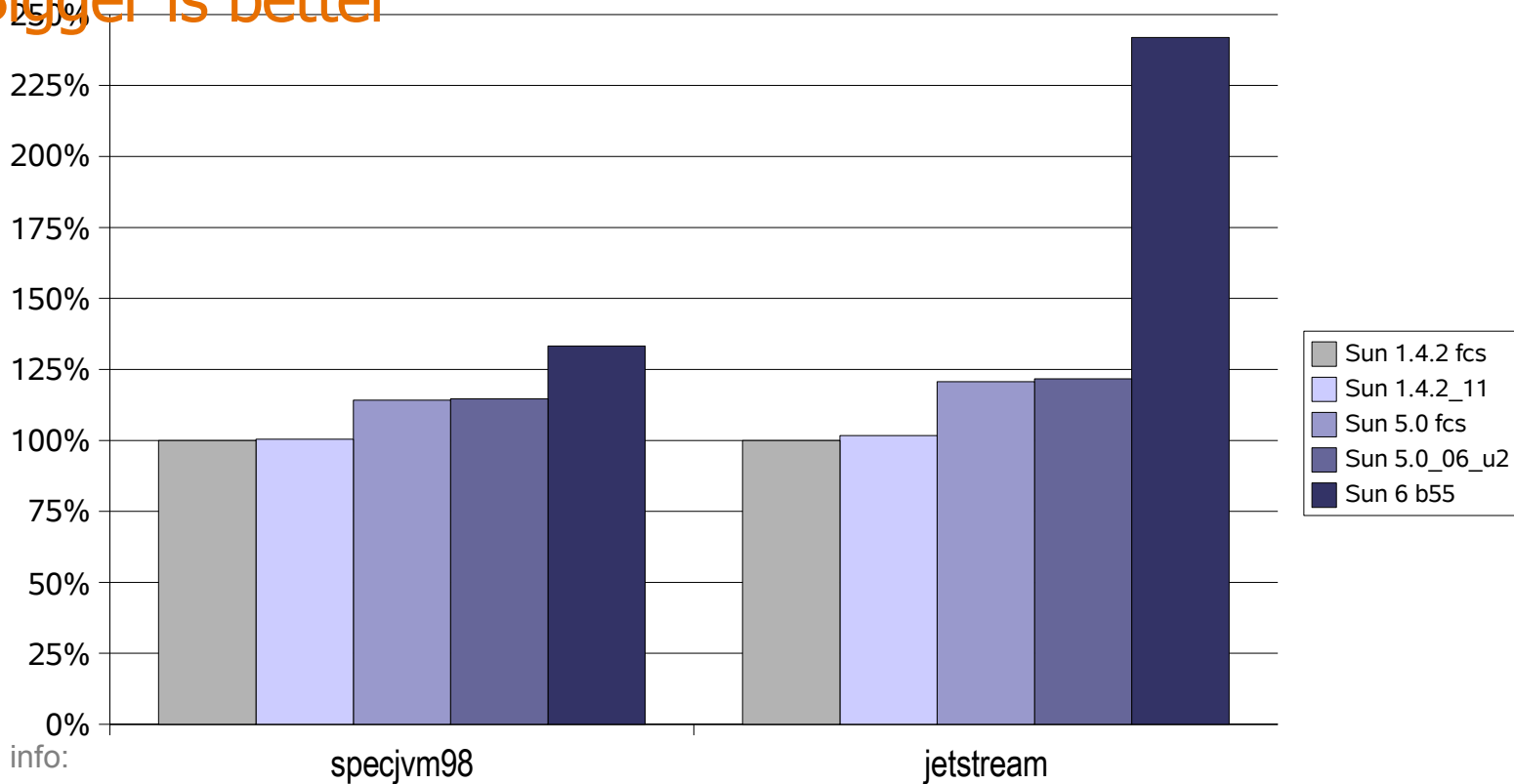
Smaller is better

Java SE 6 신기능

태그 → 성능은 어때

Desktop Performance: Runtime

Bigger is better



System info:

All JVMs are 32-bit

Source: Java Performance Engineering

Compatibility

Beans Binding

Superpackages

Resolution-Independent Graphics

Client Ergonomics

Web Services for JMX

Filesystem API

Docking

Javadoc Tags

Modules

Tiered Compilation

Friends

invokedynamic bytecode

JDK 7

Tracing

BeanShell

HTML 4.0

Asynchronous I/O

Language-level XML

Performance

Stability

Class-data sharing for applications

Class-loader based application isolation

Method References

Web Services for JMX

Swing Application Framework

I NEED

YOU

for

JDK

DEVELOPMENT



참고자료

- <http://java.sun.com/javase>
- <https://openjdk.dev.java.net>
- JDK Software Community
 - > planetjdk.org
 - > community.java.net/jdk
- JDK 6
 - > <http://jdk6.dev.java.net/>
 - > <http://jcp.org/en/jsr/detail?id=270>
- JDK 7
 - > <http://jdk7.dev.java.net/>
 - > <http://jcp.org/en/jsr/detail?id=277>

JDK 6 Component JSRs

202: Class File Update

199: Compiler API

269: Annotation Processors

260: Javadoc™ Tag Update

221: JDBC™ 4.0

223: Scripting

105: XML Digital Signature

173: Streaming API for XML

222: JAXB 2.0

250: Common Annotations

181: WS Metadata

224: JAX-WS 2.0

See JSR 270 at <http://jcp.org>

Ease of Development

XML

Web Services