Java – Quo Vadis ?

Chris Eisoldt

Java Systems Engineer

Security Technologies Ambassador

Developer Support Center

Java POWERED

Sun microsystems

We make the net work.

Agenda

- Java One News
- J2ME & Java Card
- J2SE & Core Java
- J2EE & Webservices
- Conclusion

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Java is in 100% of the Fortune 500

Target Deutsche Bank Wal-Mart Microsoft
Sun Microsystems Bank of America General Motors
Boeing Ford Motor Walt Disney
Verizon Exxon Mobil Motorola
BP UPS
Sony
AT&T
General Electric DaimlerChrysler Merck
Albertson's Citigroup Oracle Toyota Motor
Home Depot Nippon Telegraph & Telephone
ChevronTexaco Honda Motor J.P. Morgan Chase Vodafone

550M

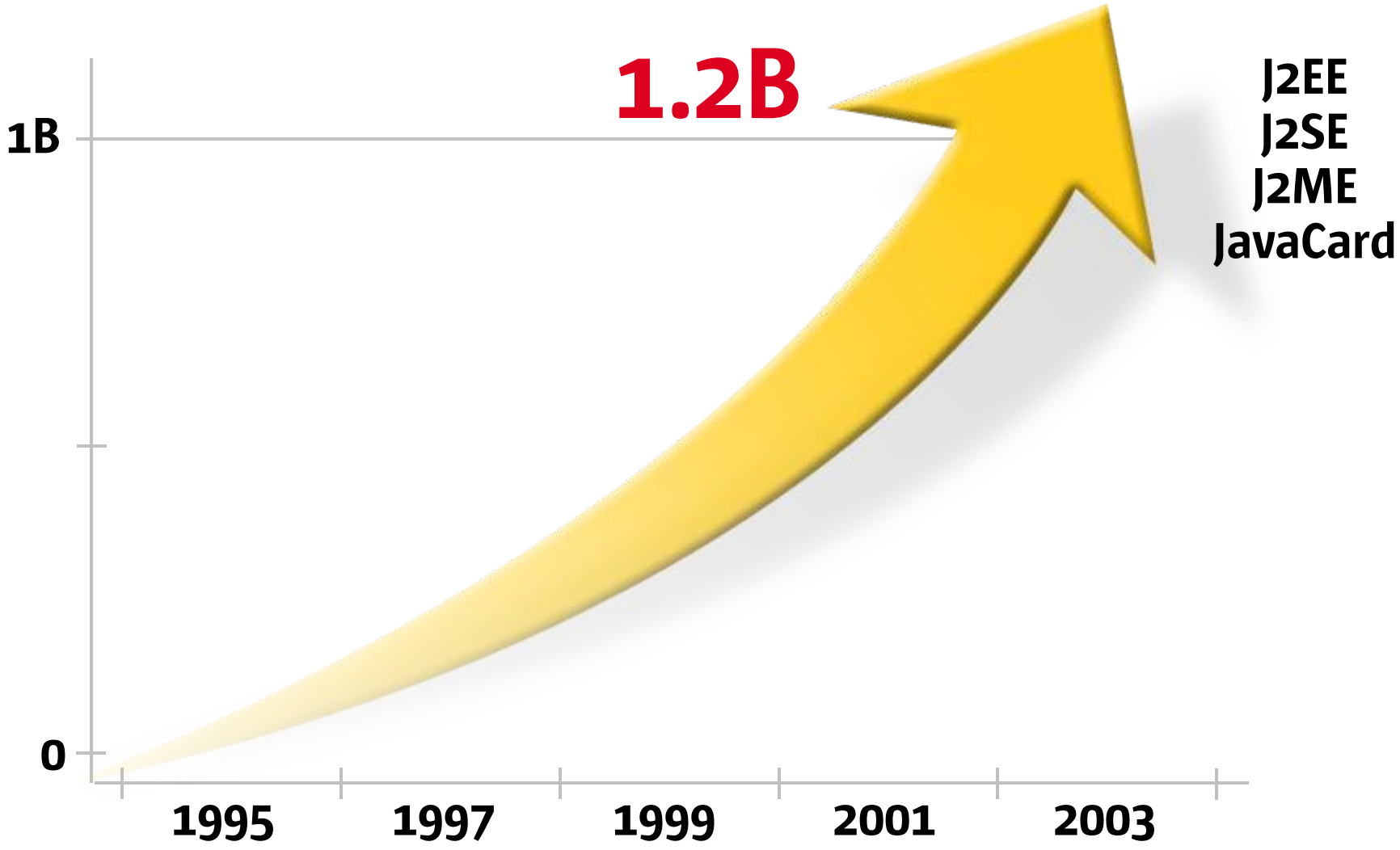
Desktops Run Java

Electronic Arts says:

17.6M visitors spend 8.2B minutes playing Java games

(70 min/user/day)

You Want Volume?



500

Java User Groups Worldwide

Java Developers Are Everywhere

Sun microsystems

Philips
IONA Technologies PLC
Fujitsu Limited
BEA Systems
Bank of America
Apple Computer
PalmSource
Sony
Texas Instruments
Matsushita
Macromedia
SAP
Boeing
Compaq
Ericsson
Borland
IBM
Intel
Caldera Systems

661 JCP Members

EDS
Nokia Corporation
Siemens
Cisco Systems
Sun Microsystems
Motorola
Oracle
Hewlett-Packard
Apache Software Foundation

Java Compatibility Matters

Sybase Macromedia Sony Ericsson Mobile Communications NEC
Hitachi Sun Microsystems IONA Sprint BEA
Samsung Electronics Corporation
Telefonica Moviles Espana Fujitsu
Novell SAS Vodafone
Oracle
ATG SAP IBM
Nokia
Siemens Orange PCS Trifork
Research In Motion JAMDAT Mobile SprintSoft NTT DoCoMo
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Aplix Corporation SeeBeyond
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Java Security Matters

Java Compatibility

+ Java Security

= Java Mobility

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Java Today

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- Java Games
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- JavaJAR
- java-net
- Java Patterns
- Javapedia
- JavaTools
- Java User Groups
- Java WebServices and XML
- Jini
- NetBeans
- OSS/J
- Project JXTA

Weekly Stats

June 20, 2003

Number of projects	222
Total Members	12,180

Welcome to java.net!

This is where Java[TM] technology collaboration happens. java.net is a new central meeting place for developers and Java technology enthusiasts to collaborate on projects, share ideas, and create the next "big thing." Whether your project is industry specific or focused purely on technology, this diverse community is the place to find other like-minded, creative people and an abundance of resources to work with. We all share a common passion, and that is Java technology. So, explore this site and contribute to any area that interests you.

This Week in Java Today

Head to **Java Today** each weekday for fresh news, features, the latest blogs, voices from the communities, and a daily spotlight. This week in Java Today you can expect these new features: you'll find John Mitchell's extensive recap of last week's JavaOne Conference, you can join in a discussion of the new Java Research License, and Craig Castelaz writes about living with leaks.

Accessing Databases from Servlets and JSP Pages: Accessing data in a database or other data sources is an important task in Web programming. This article shows how you can do the most common database manipulations from servlets and JSP pages. This article begins with an introduction to JDBC followed by some examples of servlets that allow you to access the data in the database.
» Read more

JavaOne Coverage: For truly up to date JavaOne coverage from a wide variety of perspectives check out the JavaOne Weblogs page. Many of the entries provide a talkback area so that you can participate in the discussions whether or not you are at this year's conference.
» Read more

» See all

Community Spotlight

It's cool to watch for new projects on java.net. Being a new site, we are both the home for projects in process that were created elsewhere and the home for newly created projects. The telescope

Community Voices

Sharing a Week With the GUADEC Generation

I've been at the GNOME Users and Developers Conference all week. Ivebeen jet lagged, inspired by the open sorcerers and their tightly knitcommunity, and insulted by Alan Kay. It's been fun.
- Hans Muller

Java sightings at MacHack 2003

When organizers asked me what language my hack was in, they were surprised when I said "Java". But that's changing...
- Chris Adamson

Collaboration Software (and a great demo)

Last week I learned some interesting things about Java-based collaboration software.
- Glenn Vanderburg

» See all

Related Links

Project Rave

- Project Rave
  - Productivity & simplicity
  - Drag & Drop layout of user interfaces and component infrastructures
  - plus 100% Java
- Availability
  - Early Access Fall 2003
- To Learn More
  - http://www.sun.com/software/projectrave

What's Next for Java?

Agenda

- Java One News
- J2ME & Java Card
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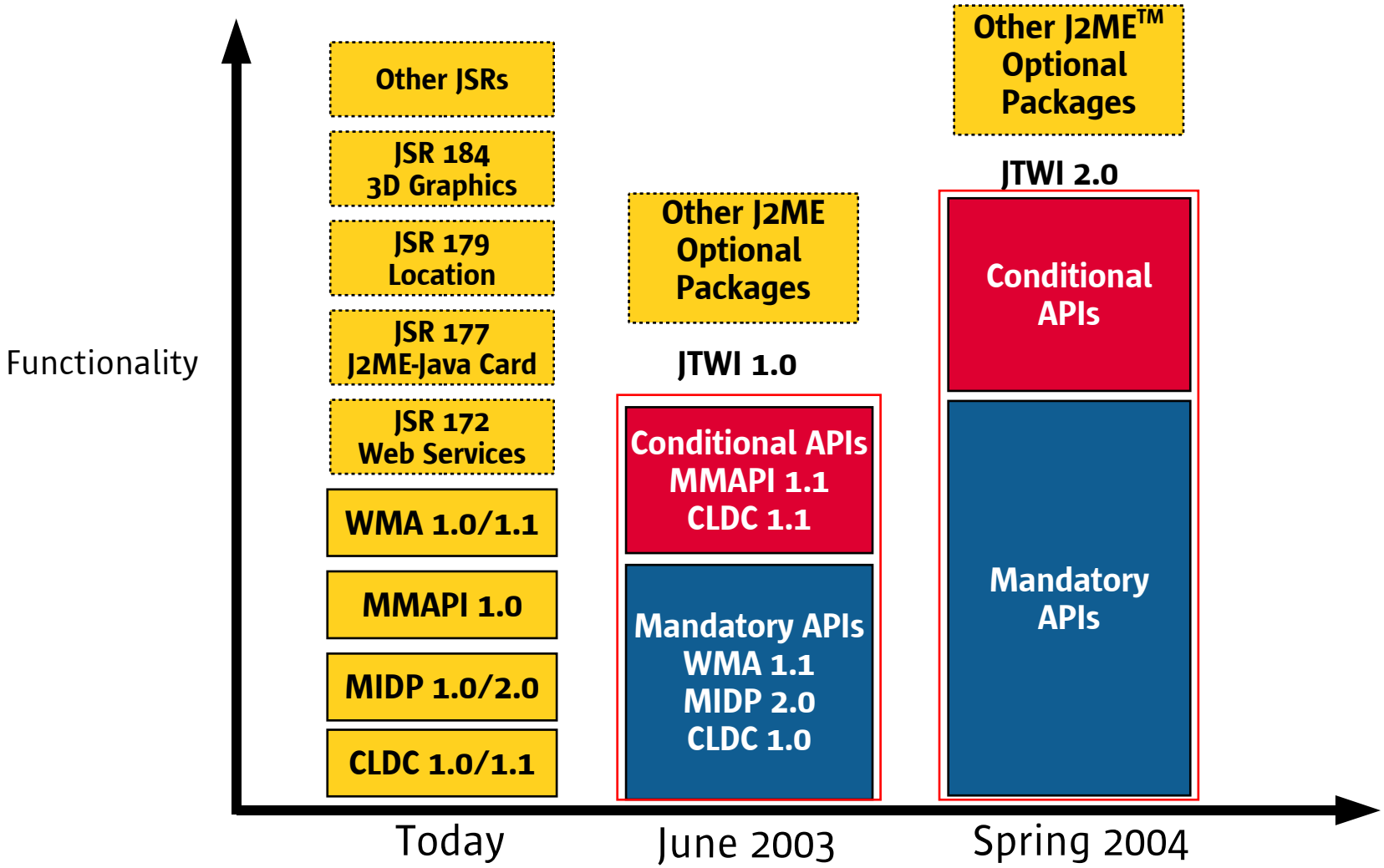
Mobility

J2ME Devices

More J2ME Devices

Java POWERED

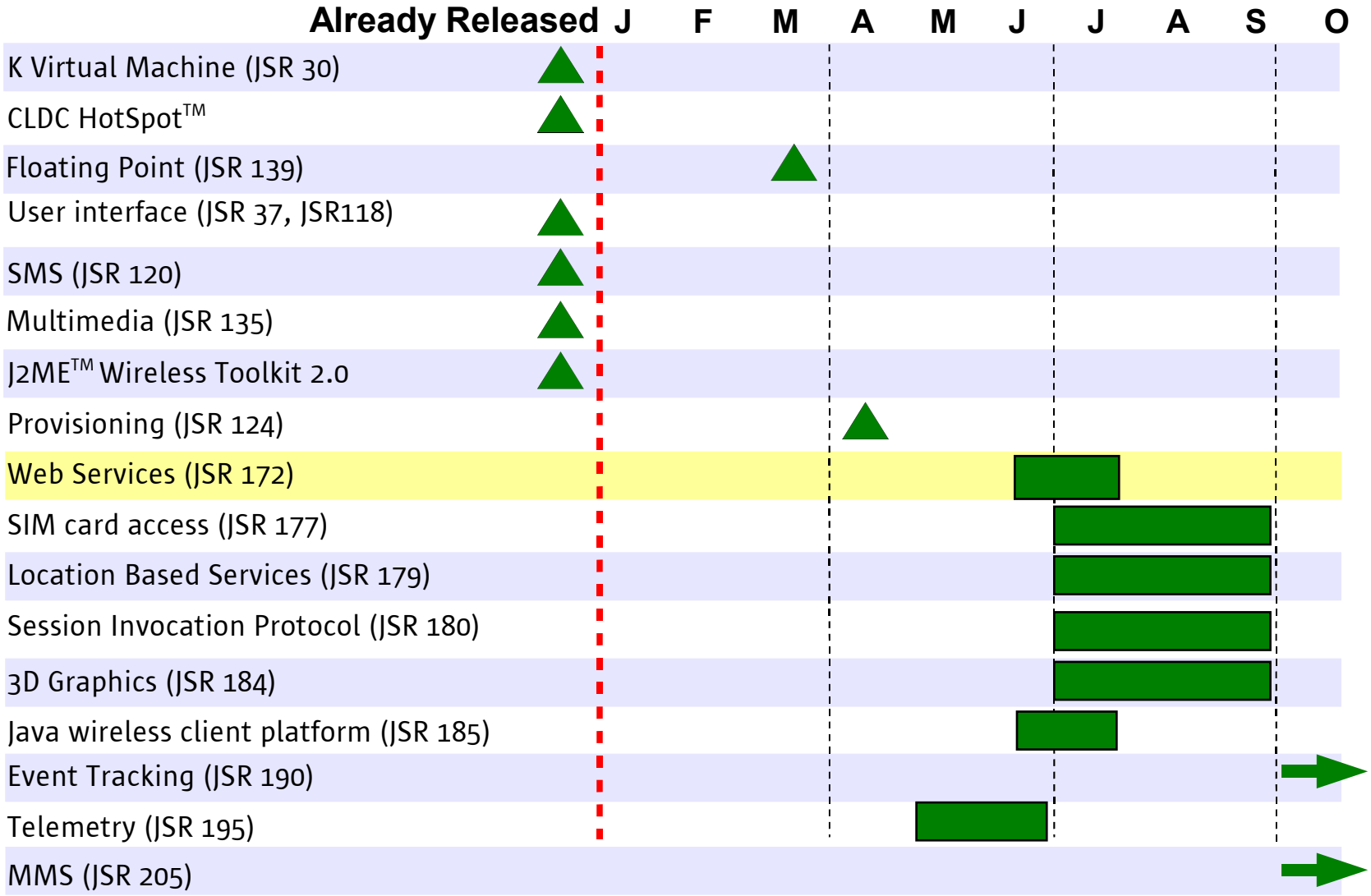
Java Micro Edition



J2ME™ Virtual Machines

Target System	32-bit ARM processor	Other 16-bit or 32-bit processors
Mobile phone Entry-level PDA	CLDC HotSpot™ Implementation	CLDC (KVM)
Smart card readers	-	
High-end PDA & Communicator	CDC HotSpot™ Implementation	CDC or PersonalJava™
Game console		
Web tablet		
Telematics system		
TV set top box	-	CDC or CLDC
Desktop workstation	-	J2SE™

J2ME™ Wireless Roadmap



JSR 172: XML Parsing Support

JAXP Code Example

```
// setup Parser Factory
SAXParserFactory spf = SAXParserFactory.newInstance();
spf.setValidating(false);

// create the parser instance...
SAXParser parser = spf.newSAXParser();

// setup XML input source and parsing event handler
java.io.InputStream is = getXMLSource();
org.xml.sax.helpers.DefaultHandler handler = getDocumentHandler();

// start parsing...
parser.parse(is, handler);
```

Code is identical to that used on J2SE

Web Services Optional Package

Code Example

```
// create stub instance
EmployeeDB_Stub stub = new EmployeeDB_Stub();

// set up the stub
stub._setProperty(Stub.ENDPOINT_ADDRESS_PROPERTY, serviceURL);
stub._setProperty(Stub.SESSION_MAINTAIN_PROPERTY, Boolean.TRUE);

// invoke the remote method 'promoteEmployee'
boolean success = stub.promoteEmployee(empName);
```

- API identical to JAX-RPC 1.0
- Simple and clean
  - Hides connection handling, parameter marshalling/un-marshalling, session management

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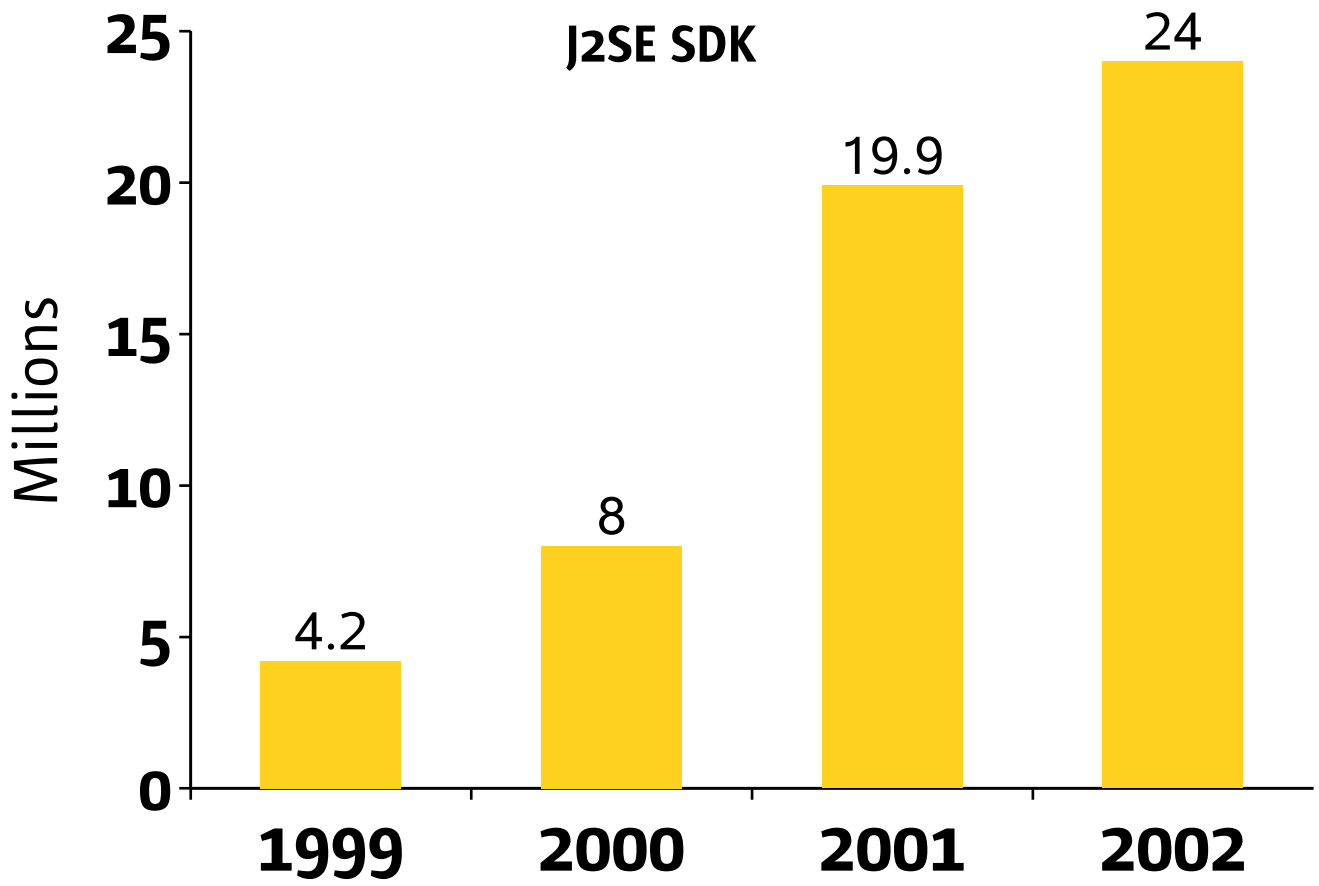
72M Java Downloads of the Desktop SDK Since 1999

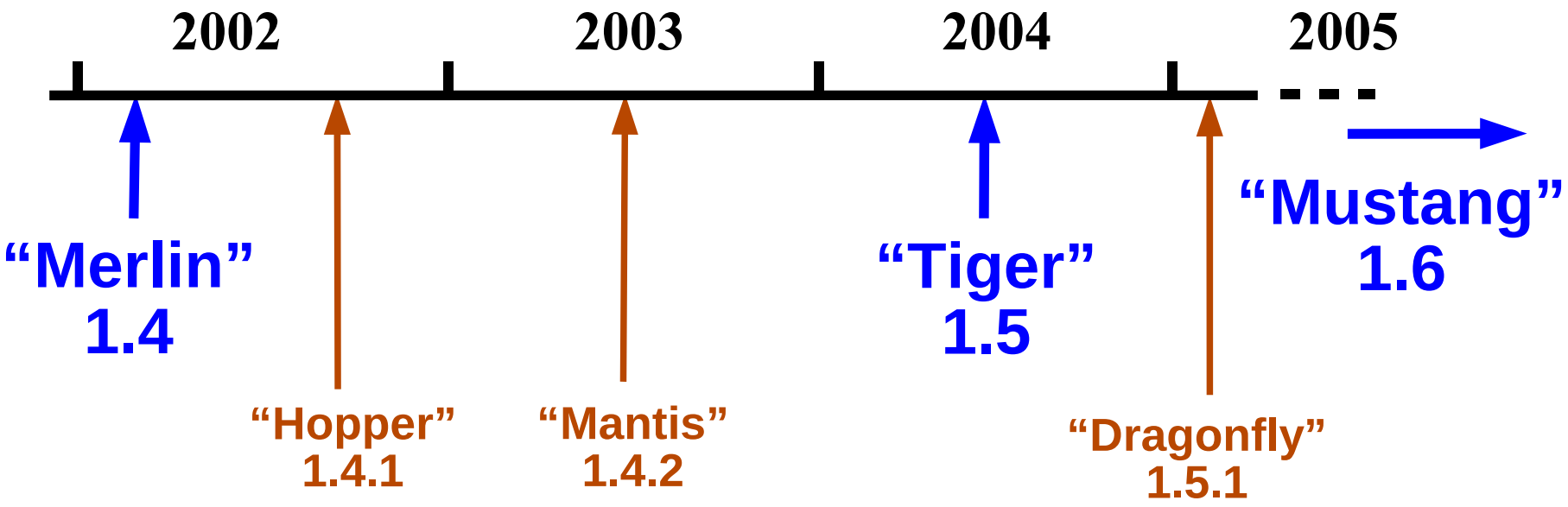


Java Standard Edition

- J2SE 0869 - bug fixes (1.4.1 + 1.4.2)
- Web Start (30% faster)
- Desktop Integration
- Swing look-and-feels
  - Windows XP ← New
  - Linux GTK+ ← New
  - Mac OS Aqua
  - Synth ← Coming

java.sun.com/j2se/1.4.2

J2SE™ Release Timeline



Hopper & Mantis

- 1.4.1 “Hopper”
  - September 2002
  - 2000+ bug fixes
  - new parallel & concurrent garbage collectors
  - Java™ plug-in updates (consumer focused)
- 1.4.2 “Mantis”
  - June 2003
  - another 2000+ bug fixes
  - new look and feels: Windows XP, GTK+
  - startup time and other performance work

1.5 “Tiger”

- Major J2SE™ platform update
  - key Java language updates
- Big Themes:
  - Quality, Stability, Compatibility!
  - Ease of Development
  - Monitoring and Manageability
  - Performance and Scalability
  - Desktop Client

Ease of Development

- Major Theme for J2SE 1.5 (Tiger) & J2EE 1.5
- Language features: Metadata, Generics, Enum, Collections, ..., + API work
- Simple declarations & usage
- Keep the power – enable the tools – up simplicity – Grow Developers
- Project RAVE

Forthcoming Language Features

For more information: http://www.jcp.org

- JSR-014 Generics
- JSR-175 Metadata
- JSR-201 Remaining language changes
  - Enhanced “foreach”-style Loops
  - Autoboxing/Unboxing
  - Typesafe Enums
  - Static Imports
  - Varargs

Generics

Compile time type safety – no need to cast!

- Today: casts, extra parentheses & temporary variables

```
static void expurgate(Collection c) {
    for (Iterator i = c.iterator(); i.hasNext(); ) {
        String s = (String) i.next();
        if(s.length() == 4)
            i.remove();
    }
}
```

- Using Generics: clearer and safer

```
static void expurgate(Collection<String> c) {
    for (Iterator<String> i = c.iterator(); i.hasNext(); )
        if (i.next().length() == 4)
            i.remove();
}
```

Enhanced for Loop ("foreach")

Easy iterating over collections

- Today: using iterators is error-prone

```
void cancelAll(Collection c) {
    for (Iterator i = c.iterator(); i.hasNext(); ) {
        TimerTask tt = (TimerTask) i.next();
        tt.cancel();
    }
}
```

- Using Enhanced for: clearer and safer

```
void cancelAll(Collection c) {
    for (Object o : c)
        ((TimerTask)o).cancel();
}
```

Autoboxing/Unboxing

Putting primitives into a collection

- Today: ...the pain of converting...

```
public class Freq {
    private static final Integer ONE = new Integer(1);

    public static void main(String[] args) {
        // Maps word (String) to frequency (Integer)
        Map m = new TreeMap();

        for (int i=0; i<args.length; i++) {
            Integer freq = (Integer) m.get(args[i]);
            m.put(args[i], (freq==null ? ONE :
                  new Integer(freq.intValue() + 1)));
        }
        System.out.println(m);
    }
}
```

Autoboxing/Unboxing

Putting primitives into a collection

- Using generics, foreach and autoboxing:

```
public class Freq {
    public static void main(String[] args) {
        Map<String, Integer> m = new TreeMap<String, Integer>();
        for (String word : args)
            m.put(word, Collections.getWithDefault(m, word) + 1);
        System.out.println(m);
    }
}
```

Metadata

Example: Simple JAX-RPC Webservice

- Today: paired interface and implementation is required

```
public interface CoffeeOrderIF extends java.rmi.Remote {
    public Coffee [] getPriceList()
        throws java.rmi.RemoteException;
    public String orderCoffee(String name, int quantity)
        throws java.rmi.RemoteException;
}

public class CoffeeOrderImpl implements CoffeeOrderIF {
    public Coffee [] getPriceList() {
        ...
    }
    public String orderCoffee(String name, int quantity) {
        ...
   }
}
```

Metadata

Example: Simple JAX-RPC Webservice

- Using Metadata: tools can generate text, programmer writes a short annotation

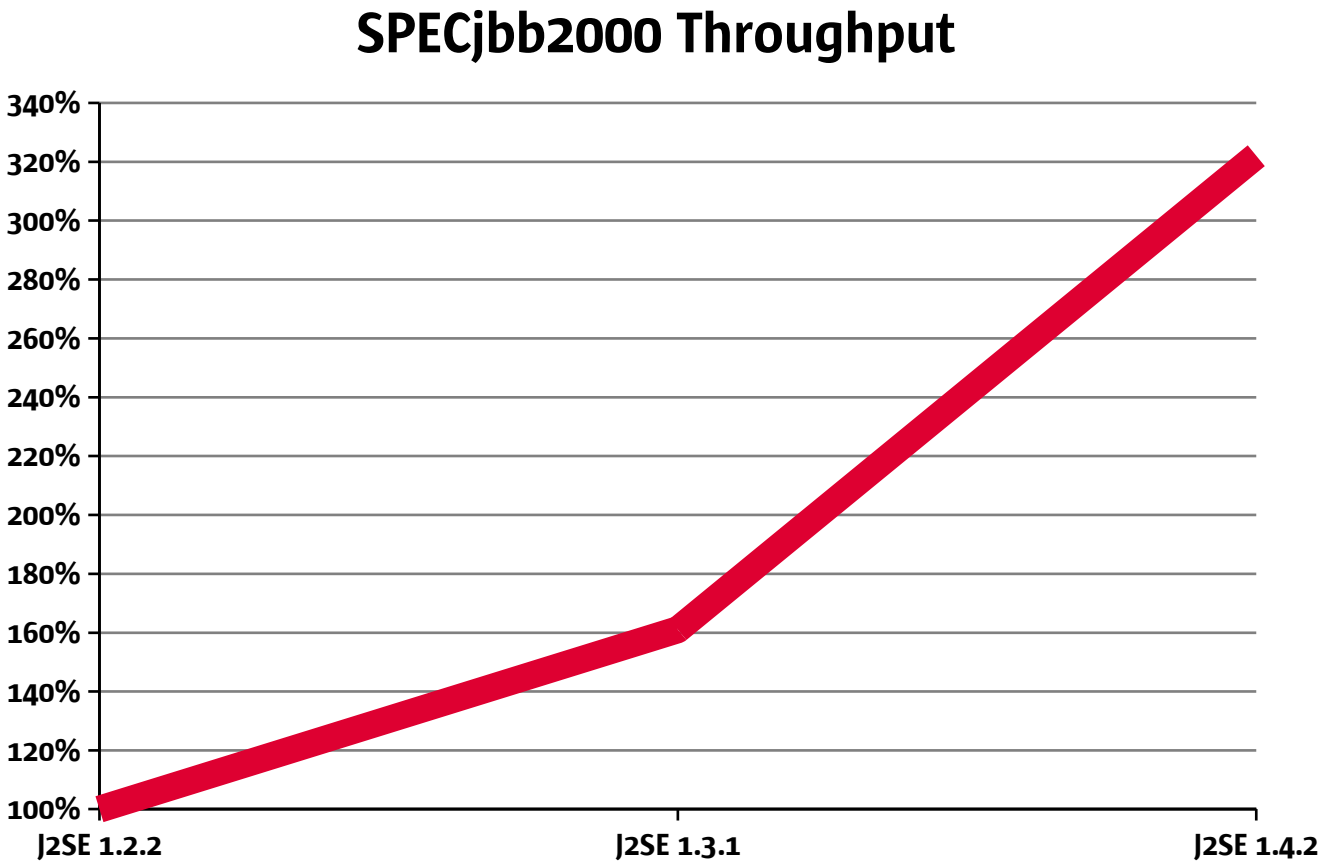
```
import javax.xml.rpc.*;

public class CoffeeOrder {
    @Remote public Coffee [] getPriceList() {
        ...
    }
    @Remote public String orderCoffee(String name, int quantity) {
        ...
    }
}
```

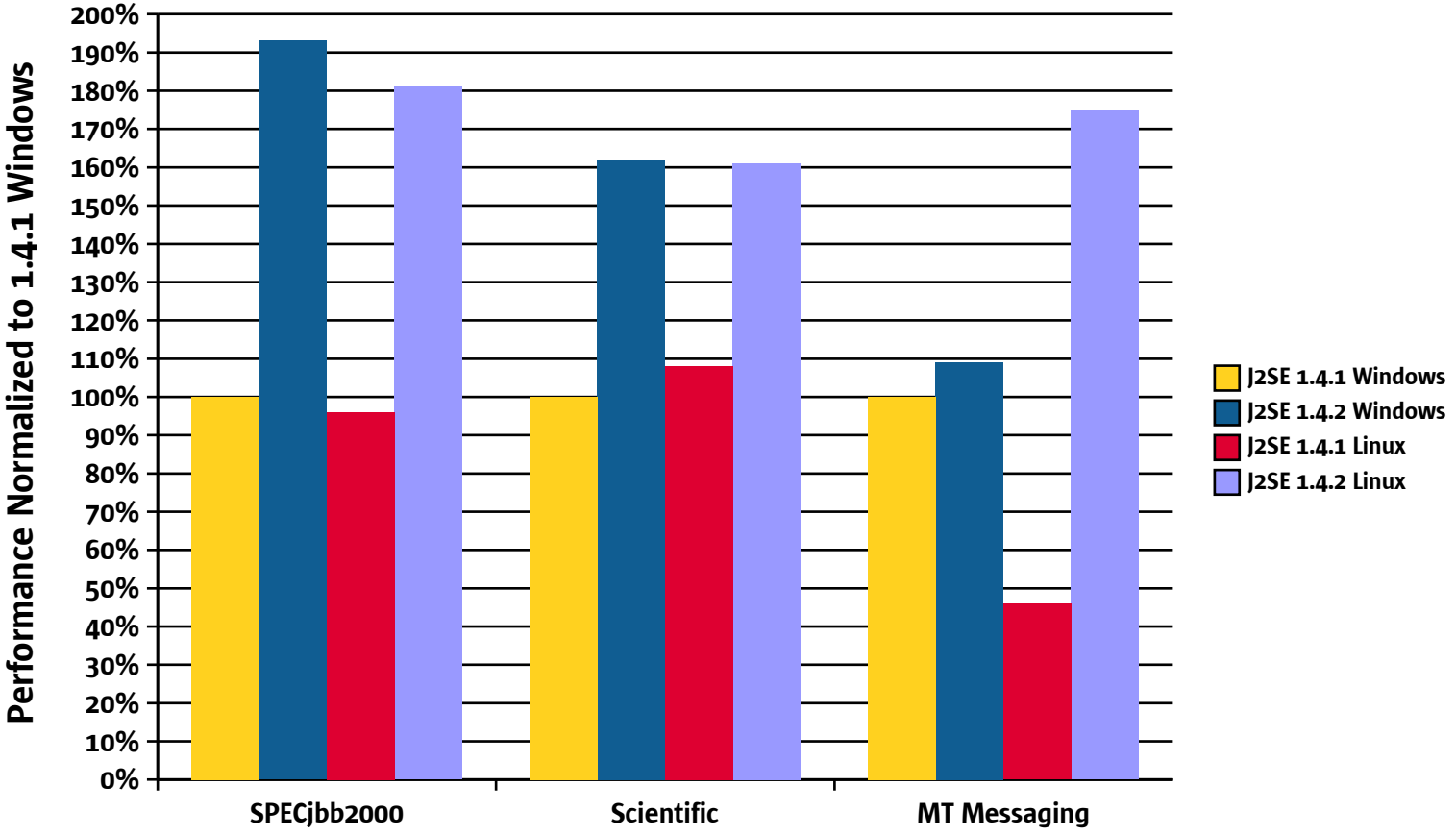
Huge Performance Gains

- Parallel GC
- Mark Sweep GC
- SSE/SSE2 Support for Intel processors (1.4.2)
- Startup times reduced – for example, Swing 30% reduction
- Swing GUI performance up 50%
- Tuning all over the place!

Continuous Performance Improvement

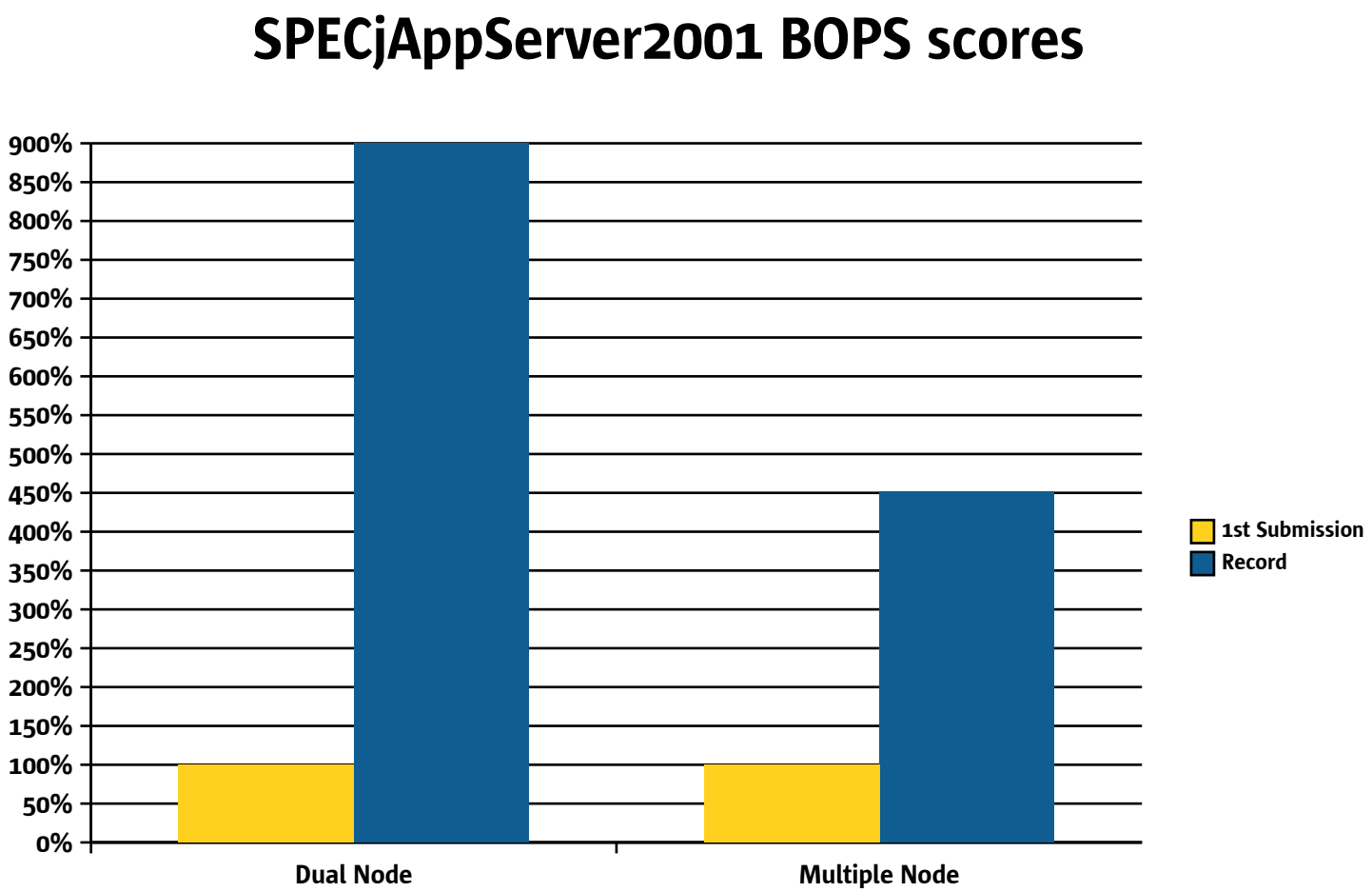


1.4.2 Server-side Improvements on x86



Tests run on 4 cpu Pentium 4 @1.6Ghz

J2EE Performance Improvements



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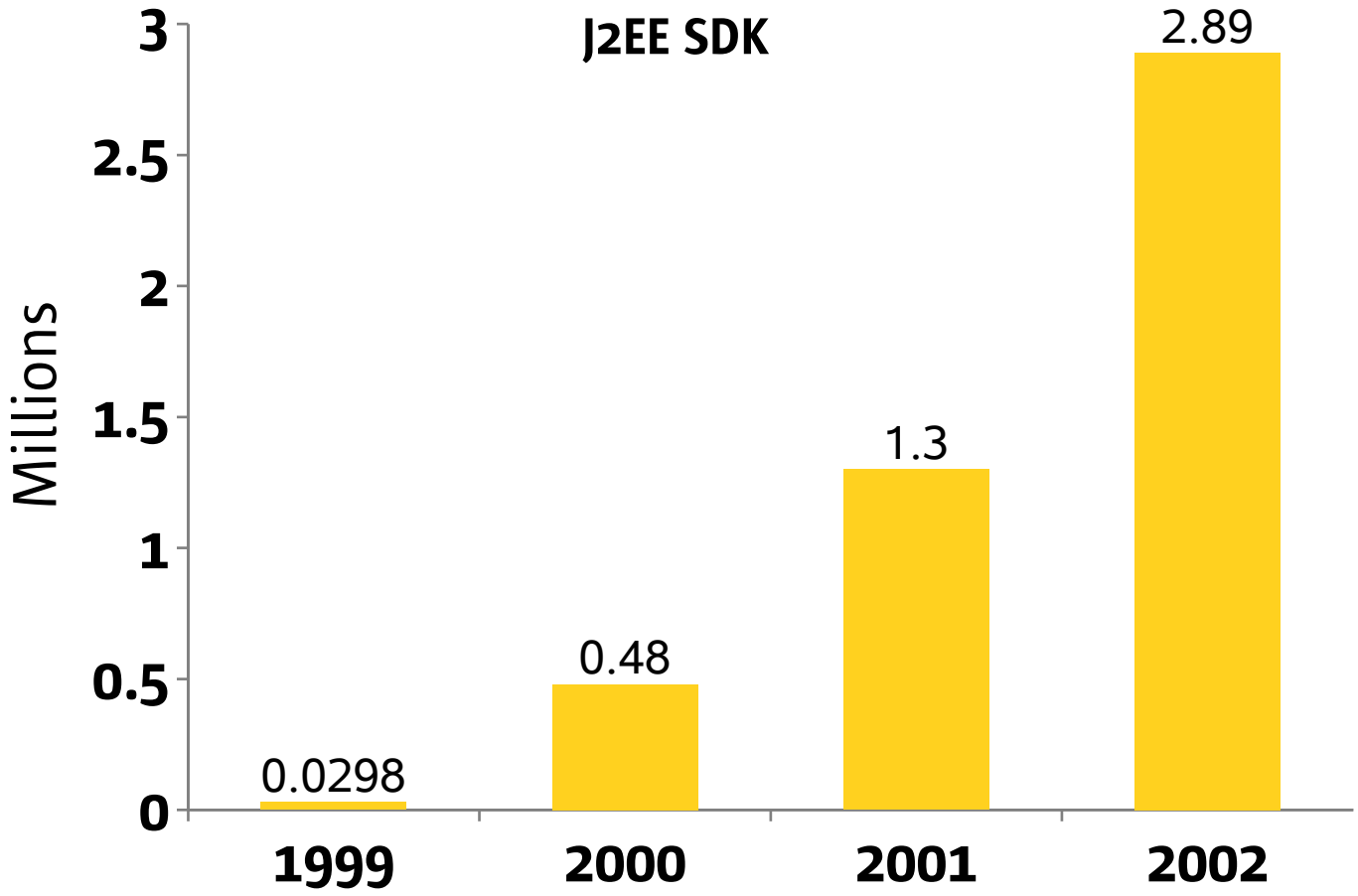
J2EE is Growing More Than 100%



Java Server Pages 2.0

- Designed to make JSP programming easier
- Expression Languages
  - Expressions using JSPs:
    - <% ((Class) pageContext.get("MyBean")).do() %>
  - Using Expression Language
    - ${MyBean.do}
- XML Syntax
- Custom Actions

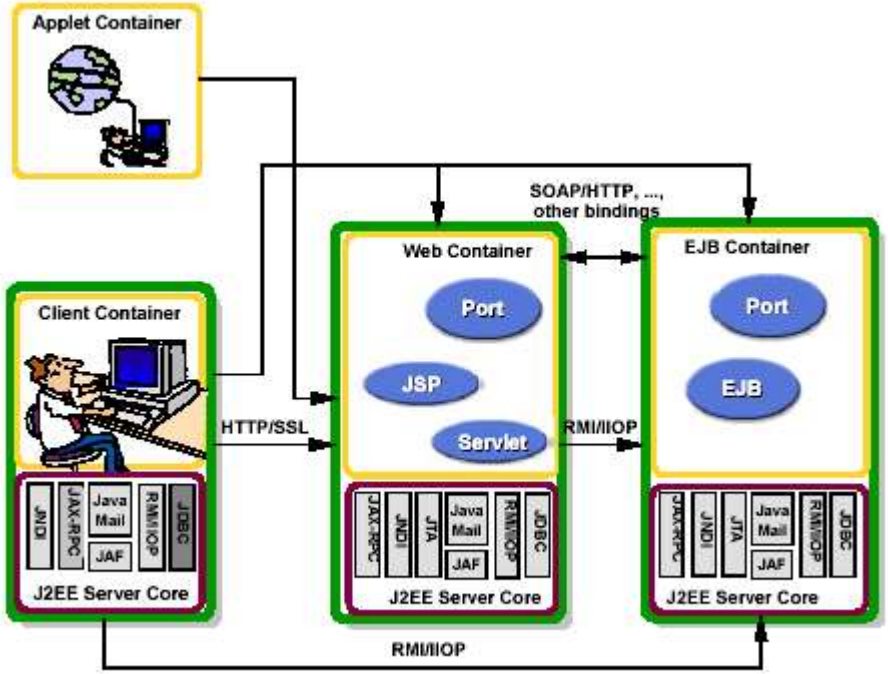
J2EE 1.4 – EJB 2.1

- EJB™ 2.1 architecture
  - Web Services
  - Timer Service
- Enhancements to:
  - Message-driven Beans
  - EJB™ QL technology

EJB 2.1

Integration von Web Services

- JSR-109 defidefines JAX-RPC mapping for stateless session beans as web service endpoints
  - SOAP stubs are created at deploy time
  - New interface
  - Follows JAX RPC syntax



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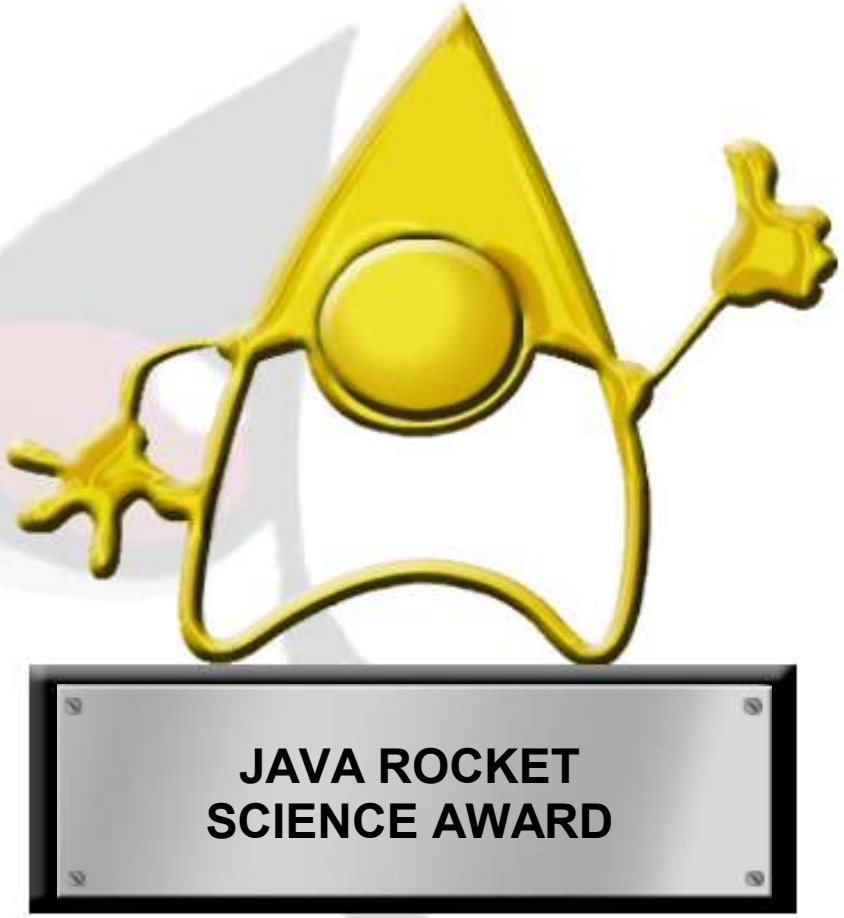
Duke's Choice Awards

Presented to: MARS ROVER



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PEACE!

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