



Topics in Java™ Accessibility

Accessibility Team
Sun Microsystems, Inc.



Presentation Overview

- The Java Access Bridge for Windows, and the state of Java accessibility on Windows through Assistive Technologies
- The Java Accessibility Helper, a developer tool for ensuring accessible Java applications
- Techniques for deploying accessible Java applets and applications on the Web
- FreeTTS and Sphinx – open source text-to-speech and voice recognition on the Java platform



Java Access Bridge for Windows

Lynn Monsanto

Accessibility Team

Sun Microsystems, Inc.



Access Bridge for Windows

- Version 2.0 is in beta test.
- Sun worked with AT vendors to identify improvements for 2.0
- Improvements include:
 - Installer is a lot smarter about finding JVMs
 - API has 15 new methods requested by AT vendors
 - Supports J2SE 1.5
 - Numerous bug fixes

Supernova supports Java

- Forthcoming support for Java, StarOffice, OpenOffice.org
- Mike Hill of Dolphin here to show this working
- Come to the booth to play with Dolphin's Supernova and the other Windows AT that supports the Java platform!

DEMO

Dolphin *Supernova*

Screen Reader & Magnifier
for Microsoft Windows with
Java and StarOffice support



Java Accessibility Helper

Rich Burrige

Accessibility Team

Sun Microsystems, Inc.



Section Overview

- What is the Java Accessibility Helper?
- New features in version 0.7
- Short demonstration
- How to get it
- Questions

What is the Java Accessibility Helper?

- Graphical tool that helps software developers and test engineers examine Java-based applications for accessibility issues.
- It verifies that all UI components can be reached using only the keyboard and that their names, roles, states, and more can be obtained by assistive technologies.

How does it work?

- It creates accessibility reports based on test sets.
- A test set describes the Java application, applet, or executable script to test and a list of tests to run.
- The tests are chosen from the Helper's built-in test properties.

New features in version 0.7

- Separate wizard-style installer
- Uninstaller
- Applets now use HTML file
- Executable scripts now “just work”
- Updated for JDK 1.4 and beyond
- Several ease of use enhancements
- 17 bugs fixed

DEMO

Java Accessibility Helper

developer tool for
Java application
accessibility evaluation



Deploying Java Applications on the Web

Peter Korn & Lynn Monsanto

Accessibility Team

Sun Microsystems, Inc.



Deploying Java Applications on the Web

- Why Java applications on the web?
- How do applets work?
- What are the problems with applets?
- Why is Java Web Start is better solution?
- How does Java Web Start work?
- What are our recommendations?

Java Applets

- Small program that runs in a browser
- Delivery vehicle for applications to millions of clients on their desktop
- Advantage is rich user interactions compared to HTML
- Disadvantages are slow download time and the applet is restricted to the browser

How do applets work?

- Applet tag in HTML tells browser how to launch applet
- Applet has `init()`, `start()` & `stop()` methods for controlling applet life cycle
- Browser opens HTML file on server
- Browser launches applet according to HTML instructions
- Browser plug-in controls applet using `init()`, `start()` & `stop()` methods

Applet “Sandbox”

- Java apps can be downloaded from anywhere on the web
- Security problem: app can have unrestricted access to host machine
- Solution: app runs in a restricted area of the browser: a “sandbox”
- Disadvantages: inflexible security policy and only single layer of security

Java Plug-in

- Problem: is browser running latest J2RE?
- Solution: Java VM is dynamically downloaded into browsers as needed
- Browser can run applets with latest J2RE versions
- No need to modify applet HTML for different browsers

Problems with applets

- Downloading applets is slow: degrades user experience having to wait
- Security policy is fixed: cannot customize policy for local environment
- Security policy is limited: all eggs are in one basket
- Need layered security if one layer fails

Solution is Java Web Start™

- Easy launching - apps can be launched from desktop, not just browser
- Portability - runs on many platforms
- Caching - no need to download app every time
- Maintainability - checks for updated app and downloads if necessary
- Work offline - can launch app when not connected to the internet

How does Java Web Start work?

- Application is installed on web server as JAR file
- XML file describes how to launch the app, which JRE is needed, where the JAR files located, etc.
- Java Web Start is installed on client
- Browser opens page for app on server, gets XML file
- Browser automatically launches Java Web Start
- Java Web Start creates start menu or desktop shortcut for app
- User launches app from start menu or desktop icon

What do we recommend?

- Consider Java Web Start instead of applets for web-delivered Java programs
- If you are using Java applets, use the Java Plugin to install the Sun Java runtime into your browser
- As always with Java, use a GUI toolkit that implements the Java Accessibility API (such as Swing), and use the Java Accessibility Helper to find accessibility problems
- As always, test for accessibility: keyboard navigation, theming, and of course compatibility with AT



FreeTTS and Sphinx-4

Willie Walker

Speech Maven

Sun Microsystems, Inc.



FreeTTS: Speech Synthesis

- Written entirely in the Java programming language
- Performs well
- Based on CMU's Festival and Flite
 - Diphone and unit-selection technology
- Support for emacspeak and gnome-speech

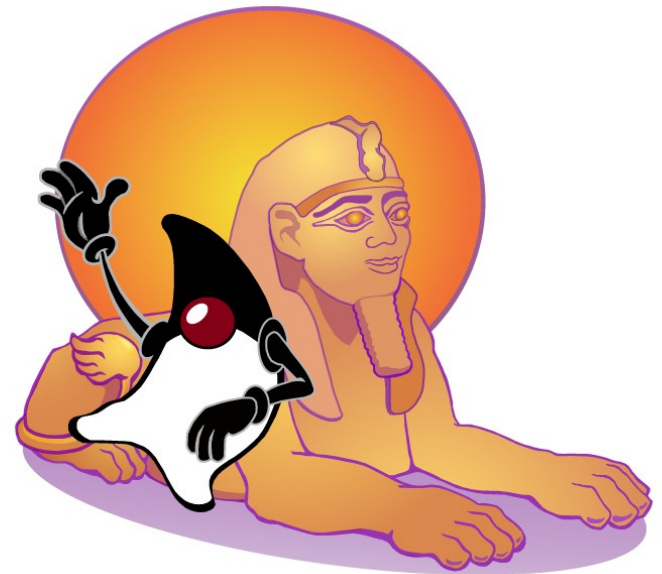


FreeTTS: Continued

- Open Source
 - <http://freetts.sourceforge.net>
 - BSD-style license
 - Contributors include people outside Sun
 - Over 100,000 downloads
- Working on availability of CMU ARCTIC voices
- Ships with Solaris
- Demo

Sphinx-4: Speech Recognition

- Written entirely in the Java programming language
- Performs well
- Multi-organization effort
 - PhDs (MIT/CMU/MERL)
 - Software pros (Sun)
- State of the art
 - Built from the ground up
 - Not just a port



Sphinx-4: Continued

- Open Source
 - <http://cmusphinx.sourceforge.net/sphinx4>
 - BSD-style license
 - Contributors include people outside Sun
 - Growing interest from research institutions and corporations
- Need better data to do reasonable desktop dictation
- Demo



Accessibility Team

access@sun.com

<http://www.sun.com/access>

