IBM Network Station Family of Thin Clients
Access for today, flexibility for tomorrow

Java
for Network Station
Manager V2R1

September 1, 1999

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Java 1.1.8

Final release for Java 1.1.*

- ‣ 1.2 is not yet stable and has performance problems therefore not suitable for deployment in the Enterprise

- ● **Components of the V2R1 Java Environment**
  - ‣ Java Plugin 1.1
  - ‣ JFC 1.1
  - ‣ javax.comm 1.1
  - ‣ Internal JDK support
  - ‣ Multiple JVM support
  - ‣ Desktoplauncher for applets
  - ‣ Beta JVM enablement
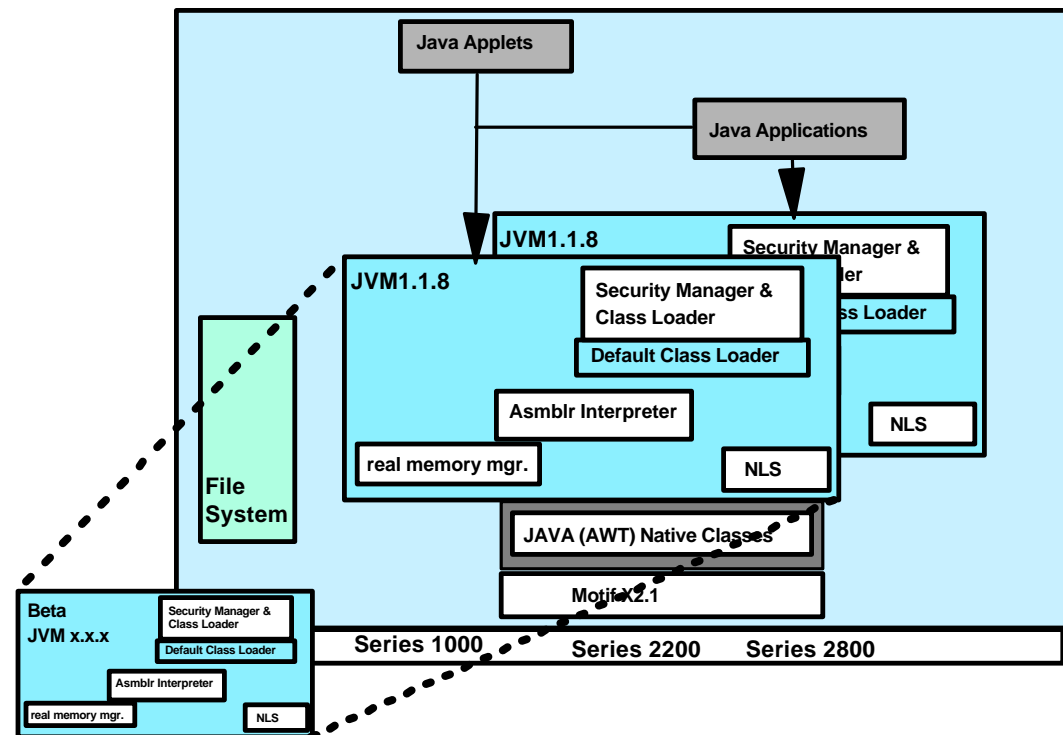 - ‣ Scalable Font support

Java Limitations & Restrictions in V2R1

- **No JITc currently delivered in product**
  - limited utility to video manipulation applications
  - native JMF implementation will diminish need

- **Currently, no explicit Java console**
  - Java must be started in Advanced Diagnostic

- **Applets run in a single JVM**
  - to reduce overhead, applets run in the same JVM

- **Java Plugin does not support all Netscape JVM capabilities (per JavaSoft implementation)**
  - no LiveConnect
  - no https
  - no automatic proxy setup
  - no Socks

Beta JVM

- **Provides capability for IBM to deliver a single concurrent JVM**
- **Install has created a single 'beta' directory along with J118**
- **Select using the environment variable $(JAVA_LEVEL)**

Java Applets

Java Applications

JVM1.1.8

JVM1.1.8

Security Manager & Class Loader

Security Manager & Class Loader

ss Loader

Default Class Loader

Asmblr Interpreter

NLS

real memory mgr.

NLS

File System

JAVA (AWT) Native Classes

Motif X2.1

Beta JVM x.x.x

Security Manager & Class Loader

Default Class Loader

Asmblr Interpreter

real memory mgr.

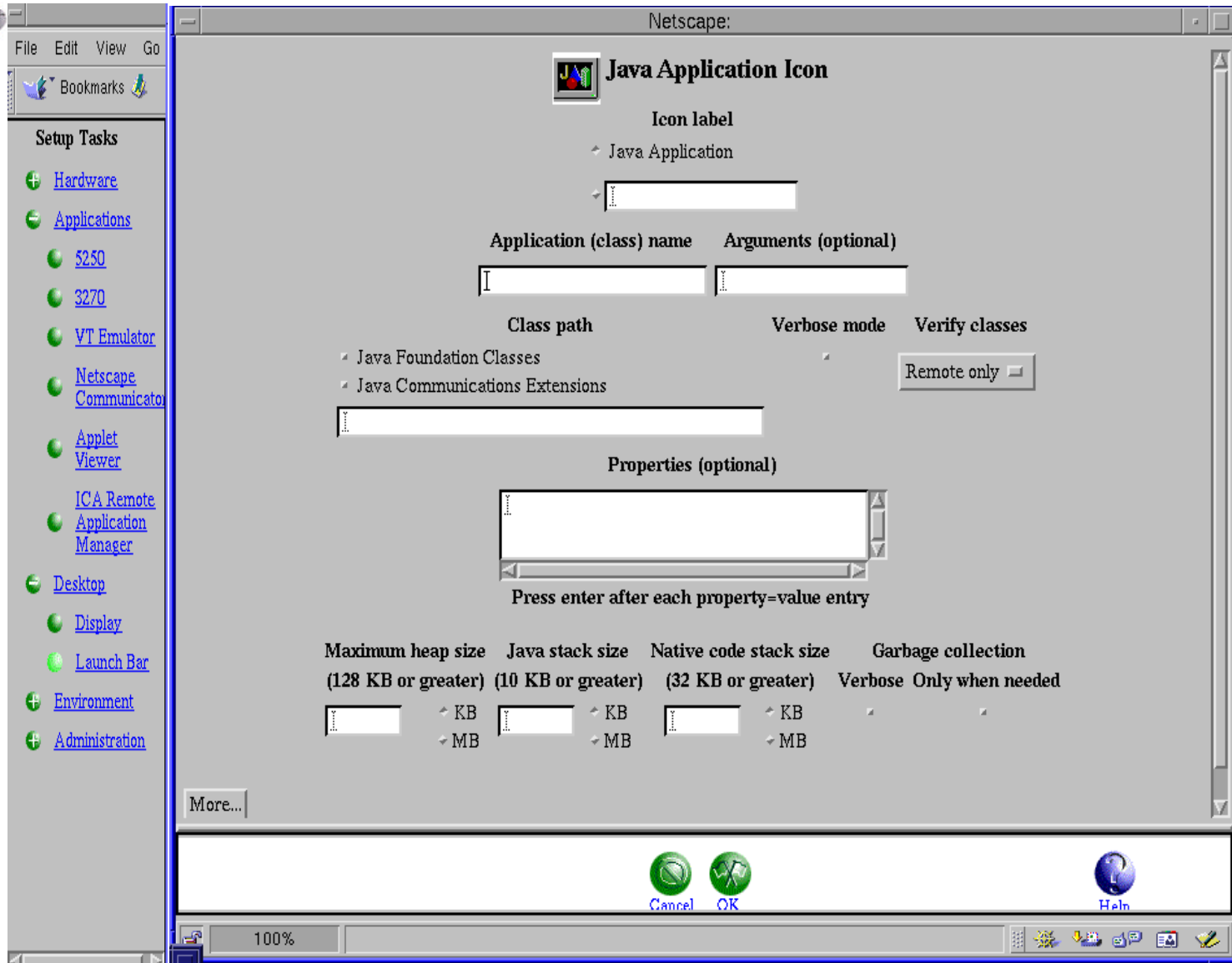NLS

Series 1000   Series 2200   Series 2800

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So what is under the hood?

commands shipped

- **javac - compilation of Java programs**
- **jar - packaging up class files**
- **javakey - signing jar files**
- **rmic - compilation of classes for supporting RMI**
- **rmiregistry - daemon to support RMI services**
- **serialver - display version number of a class**

- **although not shipped, debug versions of these tools are built for development and debug**
- **Commands must be started from Advanced Diagnostic window currently**

Configuration through NSM

Configuration with NSM2

Default Setting for Java

- **Heapsize (-mx)**   **- 6M**
- **Java Stack Size (-oss)**   **- 400K**
- **C Stack Size (-ss)**   **- 128K**
- **Class Verify**   **- network only**

- **Can determine actual values by examining output when -verbosegc is selected**

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Accessing the Standard Extensions

JFC, javax.comm,...

- **Defined extensions can be placed on the CLASSPATH**

- **however, with NSM button selection**
  - ‣ faster execution that access through classloader
  - ‣ no class validation, Security Manager - i.e.. not as 'safe'

- **Applets can select the extensions to be loaded through a classloader by using the <ARCHIVE> attribute associated with the <APPLET> tag**

Java Plugin

How do I get Netscape to use the IBM JVM?

- **Select the IBM JVM with the Plugin 'Switch' in NSM**
  - ▶ **may not be working, will be addressed in followon PTF**
- **Customer must create HTML files with <EMBED> tags**
- **May not be an appropriate solution for customers with specific requirements on:**
  - ▶ **Netscape security model - certificate management, Netscape Classloader**
  - ▶ **secure http**
  - ▶ **automatic proxy configuration**
  - ▶ **LiveConnect**
  - ▶ **Socks support**
- **Significantly faster than the Netscape JVM**
  - ▶ **200% faster on Series 1000**
- **HTML pages can be converted with Plugin Cmd LineConverter**
  - ▶ **Java JAConverter [filespecs] [-options1 value1 [-option2 value2 [...]]]**
  - ▶ **see http://www.javasoft.com/products/plugin/1.1.2/converter_readme.txt**
  - ▶ **Add /usr/lib/java/J118/lib/Converter.jar to the CLASSPATH**

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Manual Use of the Java Plugin

Original Applet Tag

```
<APPLET code="XYZApp.class" align="baseline"
     width="200" height="200">
   <PARAM NAME="model"
VALUE="models/HyaluronicAcid.xyz">

</APPLET>
```

New EMBED tag:

```
<EMBED type="application/x-java-applet;version=1.1" width="200"
     height="200" align="baseline" code="XYZApp.class"
     model="models/HyaluronicAcid.xyz"

</EMBED>
```

pluginspage attribute not applicable since not downloadable

Debugging the Java environment

- **must run Java from Advanced Diagnostic window**
  - ▸ **verbose messages available here from:**
    - ◆ -verbose option - shows classes loaded and detailed exceptions
    - ◆ -verbosegc option - shows current heap contents and GC activity

- **utilize Memory monitors and tools from development**
  - ▸ **Rough memory monitor on top left**
  - ▸ **applications are killed in priority order as memory emptied**

- **utilize Debug set of JDK tools (java_g, etc.) from development**

- **Compare execution to a Solaris/Unix system**
  - ▸ **it may be a Microsoft Windows specific 'feature'**

- **Turn off the desktoplauncher**
  - ▸ **set $DTL_ACTIVE to false**

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References
where to find more info

- under http://www.javasoft.com
  - /products/plugin/1.1.2/index-1.1.2.html
    - Plugin & Converter Information
  - /products/Java-media/JMF/
    - Java Media Frameworks (JMF) APIs
  - /products/javacomm/
    - javaxcomm (Serial Port Access)

- http://w3.hursley.ibm.com/java
  - Internal JTC development information

- http://www.alphaworks.ibm.com
  - IBM developed tools for a little of everything

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