JAVA DAYS '99



Enterprise Deployment with Java(tm) Plug-in

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What is the Java Plug-in(TM)



- Sotware to run Sun Microsystem's Java(TM) Virtual Machine inside various versions of Microsoft Internet Explorer and Netscape Navigator
  - Unmodified Java 2 Runtime Environment, Standard Edition is used, no
  - specific JRE release is required to run with the Java Plug-in (TM)
- Co-exists with existing Java Virtual Machine, does not replace it
- Use special tags
  - Object Tag for Internet Explorer
  - Embed Tag for Netscape Navigator

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Overview



- Get Java(TM) 2 SDK releases in browsers ASAP
  - Avoid Deployments Delays
- Get consistent behaviour in browsers
  - Using Standard Java 2 APIs with full functionality
  - Consistent Java Plug-in features across browsers and platforms
- Intranet Deployment of custom applets or applications
  - Browser as the universal client
  - HTTP to deploy applications as downloadable applets
  -
- Open JVM Initiative (OJI)
  - Sun Microsystems Java Virtual Machine becomes the default JVM in Netscape Navigator 5

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Java Plug-in HTML Tags



- OBJECT tag in all versions of Internet Explorer
  - Java Plug-in implemented as an ActiveX control
- EMBED tag in all versions of Netscape
  - Java Plug-in implemented as a Netscape Plug-in
- Being the default Java Virtual Machine in Netscape 5, APPLET, OBJECT and EMBED tags will all trigger the Java Plug-in.
- Easy deployment of the Java 2 Runtime Environment, Standard Edition through the HTML tags
- HTML converter free tool to help converting APPLET tags to new required tags of the Java Plug-in

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Applet Tag



- APPLET tags were used for Java Applets in Browsers
  - Do not use the APPLET tag for the Java Plug-in
  - APPLET tag still valid but trigger the default Virtual Machine
  - "Old" tags looked like this :
  -
  - <APPLET Code="DTest" Codebase="1.2/" width=200 height=200>
  - <PARAM name=p1 value="foo">
  - <PARAM name=p2 value="bar">
  - </APPLET>
- Code, Codebase, Archive (used to identifiy which component to load, where to find the .class or .jar files, etc...) part of the Applet tag itself
- Initialization values for the applets (p1 and p2) were passed as Params to the Applet

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Embed Tag



- EMBED tag is used for the Java Plug-in in Navigator
  - Declare your component with the EMBED tag
  - Provide an installation path (optional)
  - Add attributes for code and archive
  -
  - <EMBED type="application/x-java-applet"
  - code = "DTest" codebase="1.2/" width=200 height=200
  - p1="foo" p2="bar"
  - pluginspace="http://java.sun.com/products/plugin/index.html">
  - </EMBED>
- pluginspace : URL for Java Plug-in install page for Navigator 3 users
- pluginurl : URL for SmartUpdate Jar file for Navigator 4 users

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Object Tag



- OBJECT tag is used for the Java Plug-in in Internet Explorer
  - Declare your component with the OBJECT tag
  - Provide an installation path (optional)
  - Add param tags for code and archive
  -

```
<OBJECT
   classid="clsid:8AD9C840-044E-11D1-B3E9-00805F499D93"
   codebase=
        "http://java.sun.com/.../jinstall-1_2_2-win.cab#Version=1,2,2,0"
   width=200 height=200>
  <PARAM name="Code" value="DTest">
  <PARAM name="Codebase" value="1.2/">
  <PARAM name="p1" value="foo">
  <PARAM name="p2" value="bar">
</OBJECT>
```


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Object Tag - 2



- classid : Unique ActiveX indentifier for the Java Plug-in
- codebase : Optional url where to download the Java Runtime Environment and Java Plug-in in case it is not already installed
- code, java codebase, archive are moved from the OBJECT tag attributes into PARAM tags.

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Java Deployment with the Java Plug-in



- **Ease of deployment**
  - Use the normal browser mechanisms
  - Easy for End-Users
  - As an activeX in Internet Explorer
  - As a Plug-in in Navigator
  - Suitable for both Internet and Intranet Deployment
- **Internet Deployment is provided by Sun Microsystem's**

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Internet Deployment with Internet Explorer (all versions)



- To download the Java 2 Runtime Environment, Standard Edition from the Sun Microsystems Website (java.sun.com)
  - codebase=
  - "http://java.sun.com/.../jinstall-1_2_2-win.cab#Version=1,2,2,0"
- Cab File is not portable. You cannot download the cab file, store it on your own internet/intranet server and hope that users will be able to download and install the Java Plug-in from there.
- Installation bootstrap. Actual installation download happens once the user has choosen which version he requires
- Signed by Sun Microsystems, Inc

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Intranet Deployment with Internet Explorer (all versions)



- To download the Java 2 Runtime Environment, Standard Edition from an alternate website (yours !)
  - codebase=
  - "http://my.intranet/jre-1-2-2-win32.exe#Version=1,2,2,0"
- Exe files are the normal unmodified Java 2 Runtime Environment, Standard Edition installation bundles (US and International).
- Suitable for internet deployment as well (No user selection possibility).
- Signed by Sun Microsystems, Inc

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Java 2 Runtime Environment Upgrade In Internet Explorer



- To force the upgrade of the Java 2 Runtime Environment, declare the required version in the tags
  - codebase=
  - "http://.../jre-1-2-2-win32.exe#Version=1,2,2,0"
- Minimum version required, not a guarantee that this will be the version in which the applet will be running.
- Internet and Intranet deployment
- Maybe running in a superior version

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Internet / Intranet Deployment with Netscape Navigator



- To deploy the Java Plug-in from java.sun.com, add the following infornation to the EMBED tag
  - pluginspage - URL for the install page for Navigator 3 users
  - pluginsurl - URL for the SmartUpdate bundle for Navigator 4 users
  - type - Correct mime type (including version)
  - type="application/x-java-applet;version=1.2.2"

- Smartupdate
  - Automatic installation for Navigator 4.x users, similar to Internet Explorer installation experience.
  - Triggered by pluginsurl tag
  - Support Solaris and Windows platforms
  - Internal testing now, available soon

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HTML Converter



- Java Plug-in Specification
- Template based conversion
  - Included templates :
  - ieonly, nsonly, default (ie and ns), extend (plug-in on supported platforms, default JVM elsewhere).
- Releases are synchronized with each release of the Java 2 Runtime Environment
- Please refer to the Java Plug-in Specification page on java.sun.com/products/plugin
- Free of Charge !

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Java Plug-in features



- Protocols supported
- Proxy configuration
- Signed Applets
- Disk Caching
- Scripting
- Document Object Model access
- Control Panel

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Protocols



- Supported protocols
  - HTTP
  - FTP
  - Gopher
  - Socks v4
  - HTTPS
- HTTPS implementation
  - Leverage native browser APIs
  - GET/POST HTML verbs supported only
  - Server and Client certificates authentication
  - Use browser's proxy setting

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Proxy Configuration



- Three types of configurations
  - Direct Configuration
  - Manual Configuration
  - Automatic Configuration
- Browser user preferences or Java Plug-in Control Panel
- Need Restart

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Signed Applets



- **Use DSA signatures and the Java 2 Security Model**
  - Deploy manually identity.obj file to all users
- **Netscape Object Signing support**
  - RSA Certificates, Jar files only
  - Netscape Signing tool
  - On the fly security dialog, no more identity.obj or policy file to redistribute
- **Restrictions**
  - Only supported on Windows, with Crypto 2.0 installed
  - Supported in IE 3.0 and up and NS 3.0 and up
  - CAB files not supported
  - Applets packaged as jar files only

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Disk Caching



- Use browser cache for .jar and .class files
- Policy Support
  - Check new version everytime
  - Check new version every session
  - Never check for new version
- Browser's user preferences
- Changes in effect immediately

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Applet scripting



- Allow browser to access Applet's properties and methods
  - Supported immediately in all version of Internet Explorer
  - Set the SCRIPTABLE Param tag to true to allow applet scripting
  - Supported in Netscape 5 when released
- In IE, JScript and VBScript are supported
- Methods and properties returned by the BeanInfo are scriptable

```
<OBJECT ID="Juggler"
   classid="clsid:8AD9C840-044E-11D1-B3E9-00805F499D93"
   width=200 height=200>
  <PARAM name="code" value="sunw.demo.juggler.Juggler">
  <PARAM name="Scriptable" value="true">
</OBJECT>
```


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Scripting (2)



- Add an HTML button to the page
  - <input type="button"
  - name = "button1"
  - value = "Stop"
  - onClick = "stopJuggler"
  - language = "VBScript">
- Attach some VBScript code to the push event on the HTML button
  - <script language="VBScript">
  - sub stopJuggler
  - document.form1.Juggler.Stop
  - end sub
  - </script>
- invokes the stop method on the running Juggler applet

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DOM Scripting



- Access host browser Document Object Model
  - browser vendor and version dependent, USE WITH CAUTION...
- DOM is accessible through the netscape.javascript.JSObject interface
  - call and get/setMember APIs are implemented
- MAYSCRIPT must be set to true

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Misc features



Localization

- Java Plug-in 1.2.2 released in US and Japanese
- Java Plug-in 1.3 released in nine additional languages :
  - French, German, Italian, Spanish, Swedish
  - Chinese (traditional, simplified), Korean, Japan

Java Plug-in Control Panel

- Set Java Virtual Machine startup parameters
- Select JRE/JDK to be used with the Java Plug-in
- Start in debug mode
- Set the proxy information
- View, delete installed RSA certificates in the local store.
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Roadmap



Next Major Release of the Java 2 platform

- Java 2 Optional Packages installation
  - Local Installation of optional packages
  - Secure (only signed packages are installed)
  - Versioning support (Specification-Version, Implementation-Version)
- Applet Installation
  Versioning (HTML Head)
  Secure (Applet still loaded with the AppletClassLoader with the same rights as the original download)
  Applet Provider decision

Later...

- Multiple Virtual Machines support
  Shared/Private VM
  Specific Startup parameters
  Specific Java 2 version

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