



IBM Tivoli Identity Manager V5.1 Extending the JavaScript Engine with Java

Slide 1




Tivoli Identity Manager Version 5.1
Extending the JavaScript Engine with Java



This is a self-running demonstration that shows you how to complete a task.
Controls are available at the bottom of the screen.

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Objectives



When you complete this module, you can:

- **Add your own Java classes to the Tivoli Identity Manager JavaScript interpreter**
- **Call Java classes from JavaScript in Tivoli Identity Manager**

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```
emacs@itim.ibm.com
File Edit Options Buffers Tools Java Help
root
package com.ibm.tivoli.javaext;
Flap
public class TestClass
{
    Integer num;
    public TestClass()
    {
        num = 0;
    }
    public String toString()
    {
        num++;
        return num.toString();
    }
}
Start ITIM
ITIM 5
Performanc

-u:-- TestClass.java (Java Abbrev)--L18--A11-----
```

(1) In this presentation, you learn how to write Java classes that can be called from JavaScript in IBM Tivoli Identity Manager.

(2) This is a simple Java class. You can download the source code to use it for your own tests.

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The screenshot displays an Emacs editor window titled 'emacs@itim.ibm.com' with a menu bar (File, Edit, Options, Buffers, Tools, Java, Help) and a toolbar. The editor shows the following Java code:

```
package com.ibm.tivoli.javaext;  
  
public class TestClass {  
    Integer num;  
    public TestClass(int num) {  
        this.num = num;  
    }  
    public String toString() {  
        return num.toString();  
    }  
}
```

Overlaid on the Emacs window is a terminal window titled 'Terminal' with a menu bar (File, Edit, View, Terminal, Tabs, Help). The terminal shows the following commands and output:

```
itim:~/jsext # javac TestClass.java  
itim:~/jsext #  
itim:~/jsext #  
itim:~/jsext #  
itim:~/jsext #  
itim:~/jsext #  
itim:~/jsext #  
itim:~/jsext #  
itim:~/jsext #  
itim:~/jsext #  
itim:~/jsext #  
itim:~/jsext #  
itim:~/jsext #  
itim:~/jsext #  
itim:~/jsext #  
itim:~/jsext #  
itim:~/jsext #  
itim:~/jsext #  
itim:~/jsext #  
itim:~/jsext # mkdir -p com/ibm/tivoli/javaext  
itim:~/jsext # mv TestClass.class com/ibm/tivoli/javaext  
itim:~/jsext # jar cf test.jar com  
itim:~/jsext #
```

Two yellow callout boxes provide instructions:

- (1) Compile the Java class.
- (2) Put the compiled class file into a Java archive (JAR) file.

The terminal window also shows the status bar: '-u:-- TestClass.java (Java Abbrev)--L18--A11--'.

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Integrated Solutions Console - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://itim:9060/ibm/console/login.do

IBM Tivoli Identity Mana... IBM Tivoli Identity Mana...

Integrated Solutions Console Welcome was

View: All tasks

Shared Libraries

Shared Libraries

Use this page to define a container-wide shared library that can be used by deployed applications.

Scope: Cell=**itimNode01Cell**, Node=**itimNode01**

Scope specifies the level at which the resource information on what scope is and how it works.

Node=itimNode01, Server=server1

References

New Delete

Select Description

<input type="checkbox"/>	ITIM_LIB	Shared library of ITIM_LIB
<input type="checkbox"/>	JWLLib	

Total 2

Field help
For field help information, select a field label or list marker when the help cursor appears.

Page help
[More information about this page](#)

Help Logout

Close page

Done

Computer Terminal Integrated Solutions Console - Mozilla Firefox

(1) Log on to the Integrated Services Console for the WebSphere Application Server instance that runs Tivoli Identity Manager.

(2) Click Environment > Shared Libraries.

(3) Select a scope that includes the specific server that runs Tivoli Identity Manager.

(4) Click New.

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The screenshot shows the IBM Tivoli Identity Manager console interface. The main content area displays the configuration for a new shared library. The browser address bar shows `http://itim:9060/ibm/console/login.do`. The console title is "Integrated Solutions Console - Mozilla Firefox".

The configuration form includes the following fields:

- Name:** `jsext-test`. A callout bubble indicates: "(1) Name the new shared library."
- Classpath:** `/root/jsext/test.jar`. A callout bubble indicates: "(2) Type a classpath that includes the JAR file you created earlier."
- Native Library Path:** (Empty field)

At the bottom of the form are buttons for `Apply`, `OK`, `Reset`, and `Cancel`. A callout bubble points to the `OK` button with the text: "(3) Click OK."

On the right side, there is a **Help** panel with the following text:

Field help
Specifies a class path that contains the JAR files for this library. Press Enter to separate class path entries. Entries must not contain path separator characters (such as ";" or ":"). Class paths can contain variable (symbolic) names that can be substituted using a variable map.

Page help
[More information about this page](#)

The left sidebar shows a navigation menu with categories like "Guided Activities", "Servers", "Applications", "Resources", "Security", "Environment", "System administration", "Users and Groups", "Monitoring and Tuning", "Troubleshooting", "Service integration", and "UDDI".

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Integrated Solutions Console - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://itim.9060/ibm/console/login.do

IBM Tivoli Identity Mana... IBM Tivoli Identity Mana...

Integrated Solutions Console Welcome was Help Logout

View: All tasks

Enterprise Applications

Enterprise Applications

Messages

- Changes have been made to your local configuration. You can:
 - Save directly to the master configuration.
 - Review changes before saving or discarding.
- The server may need to be restarted for these changes to take effect.

Enterprise Applications

Use this page to manage installed applications. A single application can be deployed onto multiple servers.

Preferences

Start Stop Install Uninstall Update Rollout Update Remove File Export Export DDL

Select	Name	Application Status
<input type="checkbox"/>	DefaultApplication	➔
<input type="checkbox"/>	IDWebApp_war	➔
<input type="checkbox"/>	ITIM	➔
<input type="checkbox"/>		➔
<input type="checkbox"/>		➔
Total 5		

Done

Computer Terminal Integrated Solutions Console - Mozilla Firefox

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The screenshot shows the Integrated Solutions Console interface. On the left is a navigation tree with categories like Welcome, Guided Activities, Servers, Applications, Resources, Security, Environment, Naming, System administration, Users and Groups, Monitoring and Tuning, Troubleshooting, Service integration, and UDDI. The main content area is titled 'Enterprise Java Bean Properties' and contains several sections of links:

- [target specific application status](#)
- [Startup behavior](#)
- [Application binaries](#)
- [Class loading and update detection](#)
- [Remote request dispatcher properties](#)
- [Security role to user/group mapping](#)
- [View Deployment Descriptor](#)
- [Last participant support extension](#)
- [Initialize parameters for servlets](#)
- [JSP reload options for web modules](#)
- [Virtual hosts](#)

Below these is a section titled 'References' with the following links:

- [Resource references](#)
- [EJB references](#)
- [Shared library references](#)
- [Resource environment entry references](#)

A yellow callout box with a pointer to the 'Shared library references' link contains the text: "Click Shared library references." At the bottom of the console are buttons for 'Apply', 'OK', 'Reset', and 'Cancel'. A 'Help' sidebar on the right contains 'Field help' and 'Page help' sections.

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Integrated Solutions Console - Mozilla Firefox

http://itim.9060/ibm/console/login.do

IBM Tivoli Identity Mana... IBM Tivoli Identity Mana...

Integrated Solutions Console Welcome was Help Logout

View: All tasks

Enterprise Applications > ITIM > Shared library references

Shared Library Mapping for Modules

Specify shared libraries that the application uses. These libraries must be defined in the configuration.

Reference shared libraries

Select	Application	URI	Shared Libraries
<input checked="" type="checkbox"/>	ITIM	META-INF/application.xml	ITIM_LIB
Select	Module	URI	Shared Libraries
<input type="checkbox"/>	PasswordSynch	passwordsynch_web.war,WEB-INF/web.xml	
<input type="checkbox"/>	ITIM Console	itim_console.war,WEB-INF/web.xml	
<input type="checkbox"/>	EnRole	app_web.war,WEB-INF/web.xml	
<input type="checkbox"/>	ITIM_Self_Service	itim_self_service.war,WEB-INF/web.xml	
<input type="checkbox"/>	ITIM Self Service Help	itim_self_service_help.war,WEB-INF/web.xml	
<input type="checkbox"/>	ITIM Console Help	itim_console_help.war,WEB-INF/web.xml	
<input type="checkbox"/>	ITIM Message Help	itim_message_help.war,WEB-INF/web.xml	
<input type="checkbox"/>	EHS3.01	itim_iehs_help.war,WEB-INF/web.xml	
<input type="checkbox"/>	PasswordReset	passwordreset_web.war,WEB-INF/web.xml	

OK Cancel

Field help: For field help information, select a field label or list marker when the help cursor appears.

Page help: [More information about this page](#)

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Integrated Solutions Console - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://itim:9060/ibm/console/login.do

IBM Tivoli Identity Mana... IBM Tivoli Identity Mana...

Integrated Solutions Console Welcome was Help Logout

View: All tasks

- Welcome
- Guided Activities
- Servers
- Applications
 - Enterprise Applications
 - Install New Application
- Resources
- Security
- Environment
 - Virtual Hosts
 - Update global Web server plugin configuration
 - WebSphere Variables
 - Shared Libraries
 - Replication domains
- Naming
- System administration
- Users and Groups
- Monitoring and Tuning
- Troubleshooting
- Service integration
- UDDI

Messages

- Changes have been made to your local configuration. You can:
 - Save directly to the master configuration.
 - Review changes before saving or discarding.
- The server may need to be restarted for these changes to take effect.

Enterprise Applications > ITIM > Shared library references > Shared Library Mapping

Map shared libraries to an entire application or per module.

Map shared libraries to an entire application or per module.

ITIM

(1) Add the shared library you created to the selected list for the application.

Select the shared libraries to be added to the Selected list by clicking >>.

Available: jsex-test JWLLib

Selected: ITIM_LIB

New

OK Cancel

(2) Click OK.

Help

Field help

For field help information, select a field label or list marker when the help cursor appears.

Page help

[More information about this page](#)

Done

Computer Terminal Integrated Solutions Console - Mozilla Firefox

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The screenshot shows a terminal window and an Emacs editor. The terminal window displays the following commands and output:

```
itim:~/jsext # pwd
/root/jsext
itim:~/jsext # cd /opt/IBM/itim/data/
itim:/opt/IBM/itim/data # emacs scriptframework.properties
```

The Emacs editor window shows the content of the `scriptframework.properties` file. The file contains the following text:

```
#
# To add access to a class or package, the key must start with
# "ITIM.java.access". If you have multiple statements each key must be unique.
#
# This is a feature of using the IBMJS engine only.
#
# Examples:
# ITIM.java.access.lang=java.lang.*
# ITIM.java.access.obj=java.lang.Object
#
ITIM.java.access.test=com.ibm.tivoli.javaext.TestClass

#
# ITIM.script... could be turned on. Any other
# value, or ... profiling off. The comparison is
# case insens... (ng) for details).
#
# In almost a... lse. Profiling is in the
# script fram... adds a lot of noise to the
# trace logs.
#
ITIM.script.profiling=false
--:** scriptframework.properties (Fundamental)--L142--80%-----
```

Two callout boxes provide instructions:

- (1) Go to `$ITIM_HOME/data` and edit the `scriptframework.properties` file.
- (2) Set a property named `ITIM.java.access.<something>` to the name of the class you created. Save the file.

The Emacs window also shows a sidebar with a table of Shared Libraries:

Shared Libraries
ITIM_LIB
Shared Libraries
b.xml
eb.xml
ml
xml
xml

The Emacs window also shows a Help panel with the following text:

Field help
For field help information, select a field label or list marker when the help cursor appears.

Page help
[More information about this page](#)

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The screenshot shows the IBM Tivoli Identity Manager console interface. The main content area is titled "Enterprise Applications" and displays a message: "Changes have been made to your local configuration. You can: Save directly to the master configuration. Review changes before saving or discarding." A yellow callout box points to the "Save" button in this message, with the text: "Click Save. Restart the WebSphere Application Server instance." Below the message is the "Enterprise Applications > ITIM > Shared Library References" section, which includes a "Shared Library Mapping for Modules" table.

Enterprise Applications > ITIM > Shared Library References

Shared Library Mapping for Modules

Specify shared libraries that the application or individual modules reference. These libraries must be defined in the configuration at the appropriate scope.

Select	Application	URI	Shared Libraries
<input type="checkbox"/>	ITIM	META-INF/application.xml	ITIM_LIB jsect-test
Select	Module	URI	Shared Libraries
<input type="checkbox"/>	PasswordSynch	passwordsynch_web.war,WEB-INF/web.xml	
<input type="checkbox"/>	ITIM Console	itim_console.war,WEB-INF/web.xml	

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The screenshot shows the IBM Tivoli Identity Manager V5.1 console in Mozilla Firefox. The browser address bar shows `http://itim:9080/itim/console/main`. The console displays a JavaScript code snippet for extending the JavaScript engine with Java. A callout box points to the `var test = new com.ibm.tivoli.javaext.TestClass();` line, explaining that this is the syntax to create instances of the new class.

```
secondAttribute = secondAttribute.toLowerCase(locale);
}
baseidentity = firstAttribute + secondAttribute;
}
if ((baseidentity == null) || (baseidentity.length == 0)) {
var givenname = subject.getProperty("givenname");
if (((givenname != null) && (givenname.length > 0)))
givenname = givenname[0];
if (givenname == null || givenname.length == 0)
givenname = "";
else
givenname = givenname.substring(0, 1);
baseidentity = givenname + subject.getProperty("sn")[0];
}
tf = IdentityPolicy.userIDExists(baseidentity, false, false);
if (tf) {
return baseidentity;
}
}

var test = new com.ibm.tivoli.javaext.TestClass();
return createidentity().toLowerCase() + test + test;
```

This is the syntax to create instances of the new class.

OK Apply Cancel

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Summary



Now that you have completed this module, you can:

- **Add your own Java classes to the Tivoli Identity Manager JavaScript interpreter**
- **Call Java classes from JavaScript in Tivoli Identity Manager**

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