



# Configuring IIS 6 to Load Balance a JBoss 4.2 Adobe® LiveCycle® Enterprise Suite 2 (ES2) Cluster

A how-to guide on configuring Microsoft IIS as your load balancer in front of your LiveCycle ES2 applications.

## Introduction

Many customers use [Microsoft IIS](#) to direct their HTTP traffic and prefer to use it to load balance their clustered applications, including LiveCycle. This guide provides guidance around the configuration and implementation of IIS as a load balancer. For complete details on clustering LiveCycle in a JBoss environment be sure to follow the [LiveCycle ES2 JBoss clustering guide](#). This guide should be treated as an annex to the "Configuring Load Balancing" section written specifically for Microsoft IIS 6 in place of the Apache Web Server.

## Apache Tomcat Jakarta Connector

To complete the configuration you will require the connector specific to your platform available for download from: <http://www.apache.org/dist/tomcat/tomcat-connectors/jk/binaries/>

The required file is the `isapi_redirect-<version>.dll`. If you wish to enable [chunking](#) for large files, you may also download the `isapi_redirect-<version>-chunking.dll`.

In preparation for the Tech Guide instructions, place the file(s) in a folder that the IIS server will be able to access. This is normally on the IIS local hard drive but can be a network share. This location will be referred to as `<JAKARTA_HOME>`.

## Configure the `isapi_redirect.dll` properties

As of version 1.2.27, you can use either a properties file or a registry key to configure the `isapi_redirect.dll`. The dll first searches for a properties file followed by the registry. The properties file makes it possible to have multiple `isapi_redirect.dll` on the same server. For example, you could configure three LiveCycle websites on the same IIS server. One each for development, test, and production. With the registry, each instance would require a separate IIS server.

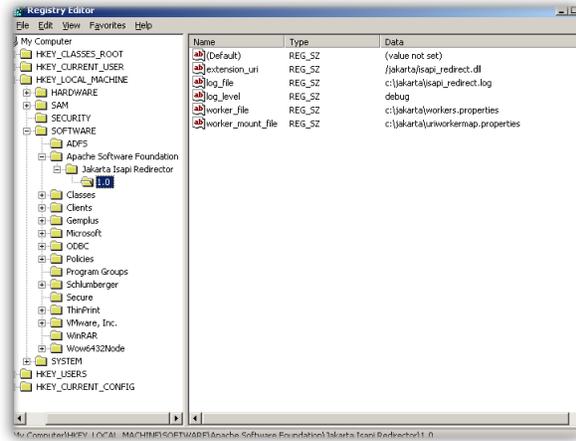
The parameters that you must configure are:

Configuration Parameters	
Parameter	Description
<code>extension_uri</code>	This should use the name of the virtual directory you created for the website, as the context root. Example: <code>/&lt;virtual directory name&gt;/isapi_redirect.dll</code>
<code>log_file</code>	Log file name (created by the DLL). Do not create the log file, let the DLL create it to avoid write access problems.
<code>log_level</code>	Debug, info, trace
<code>worker_file</code>	Located anywhere on the file system, but recommended under the <code>&lt;JAKARTA_HOME&gt;</code> directory.
<code>worker_mount_file</code>	Located anywhere on the file system, but recommended under the <code>&lt;JAKARTA_HOME&gt;</code> directory.

You must implement one of the two following options to configure the isapi\_redirect.dll. Details around optional parameters can be found in the [Apache Tomcat Connector - Reference Guide](#).

### The Registry

- Create the following key in the registry:  
 \HKEY\_LOCAL\_MACHINE\SOFTWARE\Apache Software Foundation\Jakarta Isapi Redirector\1.0



Ensure that key names are identical

### The Properties File

The properties file must have the name "isapi\_redirect.properties" or the DLL will revert to the registry values.

```
# Configuration file for the Jakarta ISAPI Redirector
# The path to the ISAPI Redirector Extension, relative to the website
# This must be in a virtual directory with execute privileges
extension_uri=/jakarta/isapi_redirect.dll

# Full path to the log file for the ISAPI Redirector
log_file=C:\jakarta\isapi_redirect2.log

# Log level (debug, info, warn, error or trace)
log_level=trace

# Full path to the workers.properties file
worker_file= C:\jakarta\workers.properties

# Full path to the uriworkermap.properties file
worker_mount_file= C:\jakarta\uriworkermap.properties

# Strip Sessions - Removes URL session suffixes of the form ";jsessionid=..."
#strip_session=1
```

## Configure workers.properties

You need to configure your load balancer and server nodes in this file.

```
# The workers that jk should create and work with only reference the
# loadbalancer and the statusmanager in the list property all server
# nodes are added to the loadbalance configuration
worker.list=loadbalancer,lbstatusmanager

#define server1
worker.server1.type=ajp13
worker.server1.host=10.208.53.44
worker.server1.port=8009

# Specifies the load balance factor when used with a load balancing
# worker.
# ----> lbfactor must be > 0
# ----> Low lbfactor means less work done by the worker.
worker.server1.lbfactor=1

# Specify the size of the open connection pool.
#worker.server1.connection_pool_size

#define server2
worker.server2.type=ajp13
worker.server2.host=10.208.53.45
worker.server2.port=8009

# Specifies the load balance factor when used with a load balancing
# worker.
# Note:
# ----> lbfactor must be > 0
# ----> Low lbfactor means less work done by the worker.
worker.server2.lbfactor=1

# Specify the size of the open connection pool.
#worker.server2.connection_pool_size

# Defining a load balancer
worker.loadbalancer.type=lb

# add all cluster nodes as workers here
worker.loadbalancer.balance_workers=server1, server2

# Define Sticky Sessions turned on/off
# Although the documentation for the connector claims this is on by
# default for type lb, I found that it was OFF by default.
worker.loadbalancer.sticky_session=1

# Define Status Worker to manage loadbalancing
worker.lbstatusmanager.type=status
```

## Configure uriworkermap.properties

```
#Take note that /adminui* does not equal /adminui/*
#This list is mostly obtained through the security and hardening documentation for ES2
#You may not need all of them depending on whether you use IIS as a proxy or simply a load balancer.
/pdfgui*=loadbalancer
/workspace*=loadbalancer
/workspace-server*=loadbalancer
/contentspace*=loadbalancer
/adobe-bootstrapper*=loadbalancer
/soap*=loadbalancer
/soap/services*=loadbalancer
/edc*=loadbalancer
/edc/admin*=loadbalancer
/adminui*=loadbalancer
/adminui/*=loadbalancer
/TrustStoreComponent*=loadbalancer
/TrustStoreComponent/secured*=loadbalancer
/FormsIVS*=loadbalancer
/OutputIVS*=loadbalancer
/OutputIVS/adminui/secure/admin*=loadbalancer
/Outputadmin*=loadbalancer
/FormServer*=loadbalancer
/FormServer/GetImageServlet*=loadbalancer
/FormServerAdmin*=loadbalancer
/repository*=loadbalancer
/AACComponent*=loadbalancer
/WorkspaceAdmin*=loadbalancer
/rest*=loadbalancer
/CoreSystemConfig*=loadbalancer
/CoreSystemConfigComponent*=loadbalancer
/um*=loadbalancer
/um/*=loadbalancer
/ReaderExtensions*=loadbalancer
/lc_admin_en*=loadbalancer
/HealthMonitor*=loadbalancer
/readerext_help_en*=loadbalancer
```

If you have help in other languages you will need to add their URLs.

For additional information on these settings and other parameters, refer to the uriworkermap.properties section of the [Apache Tomcat Connector - Reference Guide](#)

## Configure the IIS Server

### Creating the new web site

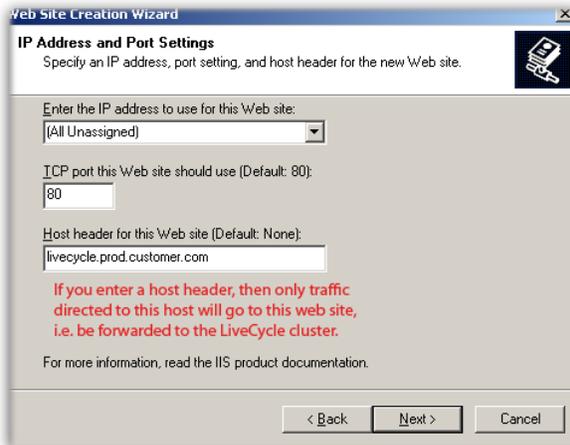
Open the IIS Manager from the Administrative Tools folder of the Start menu and optionally create a new Web Site. You may use the default IIS website but this will result in the Jakarta connector attempting to redirect all traffic that reaches the IIS server that meets the criteria that you configure.

If you would only like to redirect part of the traffic that reaches the IIS server, you can setup a new web site and add HTTP headers which match the host entered. This means all other traffic would be processed as normal and only traffic that was targeted for the LiveCycle server hosts would be evaluated and redirected.

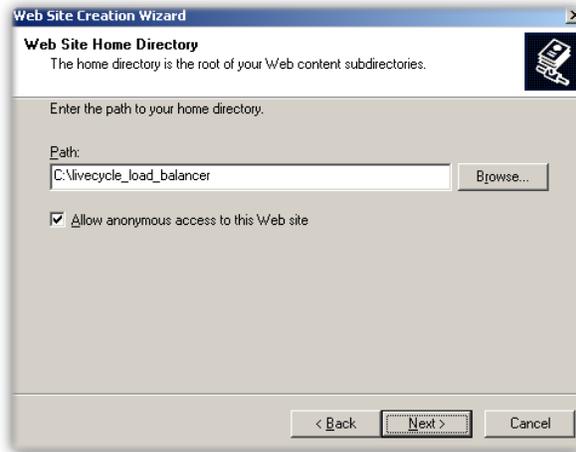
1. Create the new web site



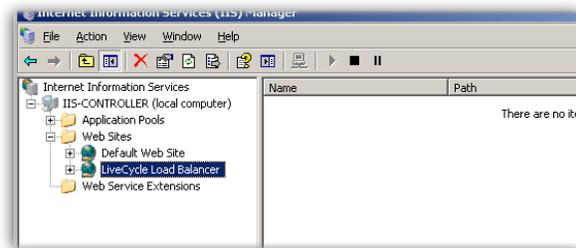
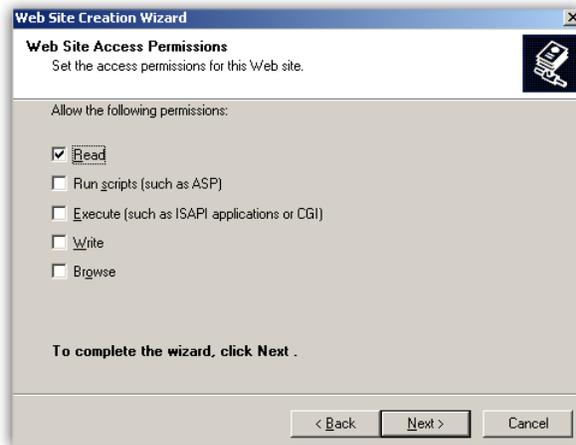
2. Update the site with the required header for the LiveCycle cluster (optional, but a common setting). Change the other defaults if your environment does not match the IIS defaults.



The web site home can be any directory on the IIS server and does not need to correspond to any other configuration entries.

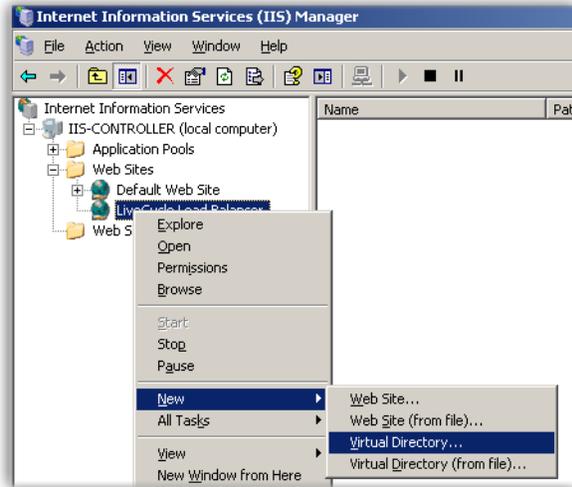


3. Provide the default read permissions.

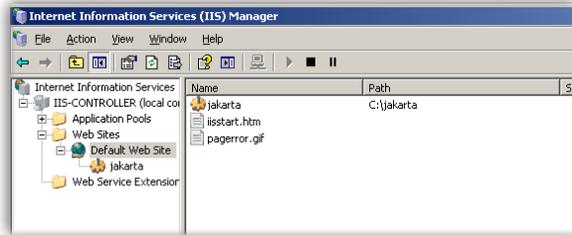


### Create a virtual directory

4. Create a virtual directory for the website you will use. The IIS default web site is shown but it can be the one defined in the previous optional step.

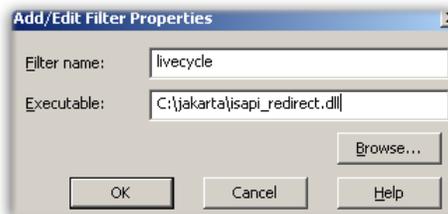
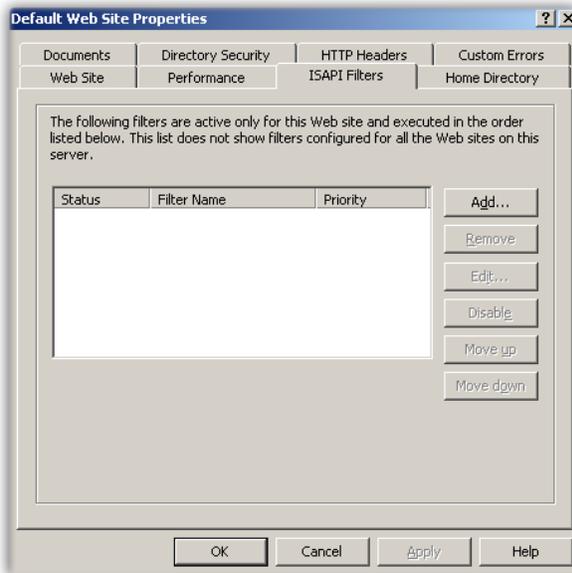


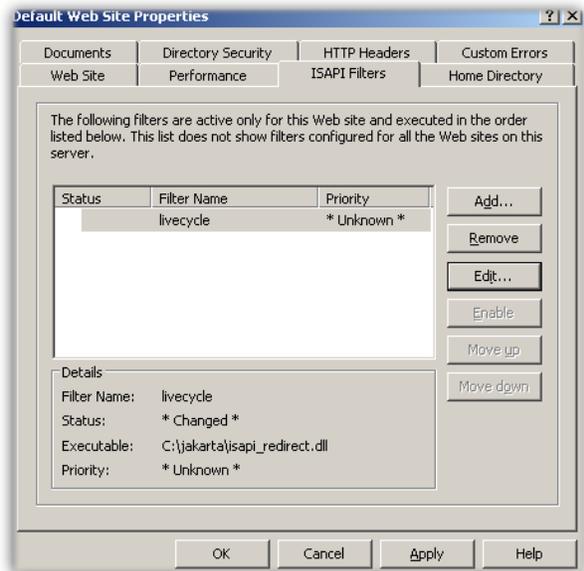
5. Provide read, run, write and execute rights.
6. Configure the directory to point to the required DLL.



### Add the connector as an ISAPI filter

7. Give the filter a name and the executable should be the absolute path to the connector, <JAKARTA\_HOME>\isapi\_redirect.dll



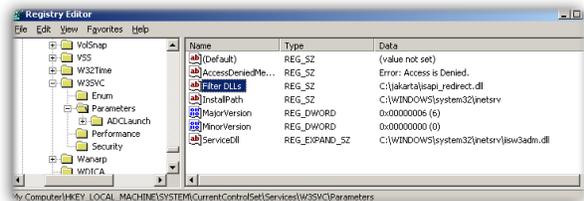


8. Click "Apply" and then "OK".

IIS will set the filter priority to high by default. This can be seen under the web site properties after closing. This can be set to a different value by clicking "Edit".

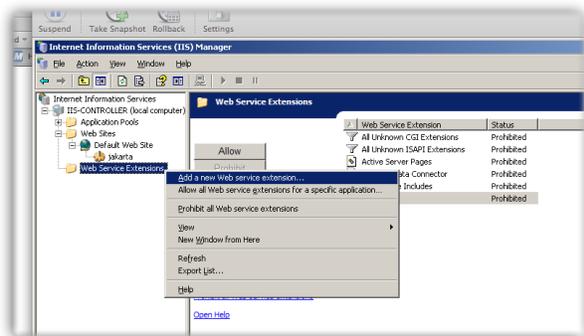
#### Add a filter key to the registry

9. Open the registry (Start->Run and type "regedit" and then Enter).
10. Navigate to the key HKEY\_LOCAL\_MACHINE\System\CurrentControlSet\Services\W3SVC\Parameters
11. Create a String registry value with the name "Filter DLLs" with the value of the absolute path to the connector dll, <JAKARTA\_HOME>\isapi\_redirect.dll

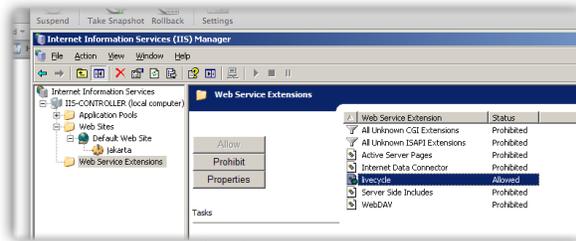
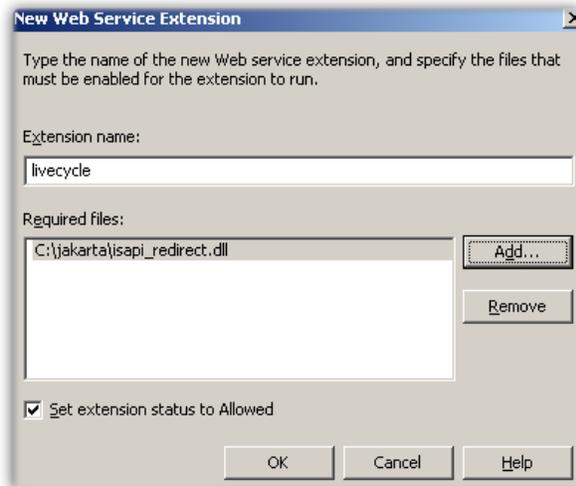


#### Add the Web Service Extension

12. Right-click on the Web Service Extensions folder to create a new extension



13. Provide the extension name. This name does not have to match anything else you have configured so far but should be obvious which application uses it. Enter the full path to the connector dll, <JAKARTA\_HOME>\isapi\_redirect.dll. Be sure to select the "Set extension status to Allowed" check box as this is off by default.



# Configuring LiveCycle ES2 for Load Balancing

Follow the [Configuring LiveCycle® ES2 Application Server Clusters Using JBoss®](#) documentation and supplement your installation by following this guide replacing the provided Apache Web Server instructions.

## Edit server.xml

1. For each node of the cluster you will need to edit the server.xml file located at:

```
<LIVECYLCE_ROOT>\jboss\server\lc_sqlserver_cl\deploy\jboss-web.deployer\server.xml
```

Default location on Windows:

```
C:\Adobe\LiveCycle ES2\jboss\server\lc_sqlserver_cl\deploy\jboss-web.deployer\server.xml
```

2. Add the a `jvmRoute` attribute to the `<Engine>` element. The value should match the name of your node.

Example value with server named node1:

```
jvmRoute="node1"
```

Additional example code from sample server.xml file for a server named node1:

...

```
<Connector port="8009" address="{jboss.bind.address}" protocol="AJP/1.3"
emptySessionPath="true" enableLookups="false" redirectPort="8443" />
```

```
<Engine name="jboss.web" defaultHost="localhost" jvmRoute="node1">
```

...

3. Save your changes and modify other nodes in your cluster. Server restart is required for changes to take effect.

## Edit jboss-service.xml

1. For each node of the cluster you will need to edit the jboss-service.xml file located at:

```
<LIVECYLCE_ROOT>\jboss\server\lc_sqlserver_cl\deploy\jboss-web.deployer\META-INF\jboss-
service.xml
```

Default location on Windows:

```
C:\Adobe\LiveCycle ES2\jboss\server\lc_sqlserver_cl\deploy\jboss-web.deployer\META-INF\
jboss-service.xml
```

2. Change the value of the following XML element to true.

```
<attribute name="UseJK">true</attribute>
```

3. Save your changes and modify other nodes in your cluster. Server restart is required for changes to take effect.

We welcome your ideas and comments. Please send any feedback on this technical guide or suggestions for other topics to: [LCES-Feedback@adobe.com](mailto:LCES-Feedback@adobe.com)

## Additional Resources

This article was created in part based on the following resources:

[http://www.adobe.com/go/learn\\_lc\\_clusterJBoss\\_9](http://www.adobe.com/go/learn_lc_clusterJBoss_9)

<http://tomcat.apache.org/connectors-doc/reference/iis.html>

[http://tomcat.apache.org/connectors-doc/webserver\\_howto/iis.html](http://tomcat.apache.org/connectors-doc/webserver_howto/iis.html)

<http://tomcat.apache.org/connectors-doc/reference/workers.html>

<http://tomcat.apache.org/connectors-doc/reference/uriworkermap.html>

For more information and additional product details: <http://www.adobe.com/devnet/livecycle/>

