



Metamerge Integrator 4.6.8: FAQ



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Preface

Metamerge Integrator is now owned and supported by International Business Machines Corporation.

Chapter 1. Installation

My license is about to expire. What do I do?

Contact your sales representative. The latest version of the product does not have any license keys.

I have a Unix system without X-Windows. How do I install Metamerge Integrator?

Let's assume that setting the *DISPLAY* variable does not help you. The target system, for example, might be on a protected net that cannot see your X Server.

You cannot run the Admin tool, as it has a GUI, but you can still run the Integrator server. Do the following:

1. Install on a Unix machine where you have access to an X server. Install to a directory called metamerge.
2. Create an archive (for example, tar or zip) with all the files installed in metamerge.
3. Copy the archive to the target machine and extract the metamerge directory.
4. Edit the miserve.lax file. The sections LAX.DIR, LAX.NL.CURRENT.VM and LAX.ROOT.INSTALL.DIR must refer to the path where you have placed the metamerge directory.

I have installed a new version, service pack or Connector version, but I see the old functionality only.

Make sure that all your old jar files in the jars directory and subdirectories are renamed to an extension different than .jar. For example, if you have a new jdbc.jar, make sure it either replaces the old one, or that you rename the old to jdbc.jar.old. This is because the jar file loader picks up any jar files it finds. Renaming a file is not enough. For the loader to miss it, it cannot have the extension .jar.

If you do a full install, make sure you install on a fresh directory and copy your licence file (aslicense.jar) to the jars directory.

Components made for later version of Integrator (IBM® Directory Integrator 4.7 or later) might not work with the 4.6 series.

Can I install different versions of Integrator on the same computer?

Yes. Just make sure you don't install them on the same or overlapping directories. Also remember that, on Windows® platforms, your shortcuts/program menu points to one specific instance of miadmin.exe or miserver.exe only.

You can also have them use different versions of Java™. Each installation has .lax files that are edited during installation.

miadmin.exe and miserver.exe are found on the install directory and use the property files miadmin.lax (Admin tool) and miserver.lax (Metamerge Integrator).

These properties are used by our launcher, Install Anywhere and fully documented on the ZeroG web site. The most important variables in these are

- LAX.NL.CURRENT.VM section which shows which Virtual Machine is to be used. It is set up correctly by the installer.
- LAX.CLASS.PATH must not be touched. If you want to add new jars (for Connectors and so forth), this is taken care of by miloader.jar that recursively traverses the jars directory.
- LAX.STDERR.REDIRECT shows the file name where error messages from the miadmin or miserver goes. Default is no logging at all for Windows and stderr for Unix.
- lax.nl.java.option.java.heap.size.max–Use this variable to change the maximum allowable memory size in bytes. By default the Java VM does not allocate more than 64 MB of memory.
- com.metamerge.securityProvider–Use this variable (available from 4.6.8) to change or remove the security provider. Default is to use the Cryptix-libraries. You can also clear the field if the libraries are in the way.
- com.metamerge.securityTransformation–Use this variable (available from 4.6.8) to define the transformation you want the provider to apply (for example, DES/ECB/None).

Chapter 2. Writing AssemblyLines

I need the file my AssemblyLine creates before the AssemblyLine has finished, but it is empty or incomplete. I also need to change the output filename while the AssemblyLine is processing.

Files are closed only when the AssemblyLine terminates. However, you can force a Connector to close and reinitialise. The snippet of code below creates a new file each time it is executed. The filenames are file1.xml, file2.xml and so forth (assuming the variable *iteration* was initialised to 0).

```
iteration++;
// close the file associated with the Connector named xml
xml.connector.terminate();
// Associate a new filename to the Connector parameter filePath
xml.connector.setParam("filePath","c:/tmp/file" + iteration + ".xml");
// reinitialise the Connector
xml.connector.initialize(null);
```

This code can be put wherever you want, even within the Connector itself.

If you have opened the AddOnly Connector in **append** mode, the setParam() is not necessary, but for **output** mode the sequence terminate() and initialize() can make you lose previous work.

I need to pass the input/output file names (or other Connector parameters) to an AssemblyLine I start from an EventHandler.

On the EventHandler side you want to pass a filename over to the AssemblyLine, and the easiest way is to use an **entry** object. Here the filename is called *myFileName*, and we use a Property instead of an Attribute (see "Appendix B. Dictionary of terms" in *IBM Directory Integrator 4.7: Reference Guide*).

```
var entry = system.newEntry();
entry.setProperty("inputFileName","myFileName");
// start AssemblyLine
var al = main.startAL ("myAssemblyLine", entry);
al.join (); // wait for al to finish
```

On the AssemblyLine side you have code in your Prolog, in the **Before Connectors Initialized** part (because you want your parameters to be used when the Connectors are initialised).

```
workEntry = task.getWork(); // gets the initial entry
var FileName = workEntry.getProperty("inputFileName");
// Set the relevant parameter of the raw connector
myFileConnector.connector.setParam("filePath",FileName);
// If you don't want the AL to run with the initial entry, clear it
task.setWork(null);
```

For more information about the Raw Connector, see "The Raw Connector object" in *IBM Directory Integrator 4.7: Reference Guide*.

There are a couple of finer points here:

1. Clearing the work entry makes sure that we pass control to the first Iterator. Of course, if you have an entry that is to be processed, do not clear it. See "Connector modes" in *IBM Directory Integrator 4.7: Reference Guide* for further discussion.
2. Using the Properties instead of the Attributes makes sure that the AssemblyLine does not map the Attribute later (see "AssemblyLine setting tab" in *IBM Directory Integrator 4.7: Reference Guide*).

When creating XML files from an LDAP directory or LDIF file, the AssemblyLine fails.

When reading from an LDAP directory or an LDIF file, the distinguished name is typically in an attribute named \$dn. If you map this attribute without changing the name into an XML file, it fails because \$dn is not a legal tag in an XML document. If you do explicit mapping, change "\$dn" to "dn" (or something without a special character) in your output connector. If you do implicit mapping (for example, * or **Automatically map all attributes** checked in AssemblyLine/Settings), you can configure the XML parser to translate the distinguished name (for example, "\$dn") to a different name. For example, you could add something like this in the **Before Add Hook**:

```
conn.setAttribute("dn", work.getAttribute("$dn"));
conn.removeAttribute("$dn");
```

When I compare JavaScripts strings, I get inequality despite the fact that the strings are equal.

JavaScript™ has two kind of strings:

- String literals like "test"
- The string Object you get as a result of new String();

Usually string literals are used, but when you use methods like *work.getString("a")* it returns a string Object. See "Comparing JavaScript strings" in *IBM Directory Integrator 4.7: Reference Guide*.

Can I use BeanShell with with Metamerge Integrator?

We have tested it briefly, but not certified it. If you want to try it, see "BeanShell" in *IBM Directory Integrator 4.7: Reference Guide* for instructions.

How do I start the Metamerge Integrator from a trigger in my database?

There are many ways to do that:

- Have the trigger update a dedicated table with the data you want sent to the AssemblyLine. Start an AssemblyLine every 5 minutes (for example, by using the Timer EventHandler), iterating through the table and removing entries as they are processed. See "Timer EventHandler" in *IBM Directory Integrator 4.7: Reference Guide*.
- If the AssemblyLine runs on a different machine, make the trigger generate small files containing the relevant data and reachable by FTP. The FTP Poller can then look for files and process them, making sure they are removed after being processed. See "FTP Poller" in *IBM Directory Integrator 4.7: Reference Guide*.

Discussion

Writing to a TCP port and using the TCP Port EventHandler (see "TCP Port EventHandler" in *IBM Directory Integrator 4.7: Reference Guide*) seems nice, but must be avoided if you are concerned with data being lost. You (or the trigger) have no simple way of knowing what data has and has not been processed. The same can be said for a solution involving the HTTP Client (see "HTTP Client Connector" in *IBM Directory Integrator 4.7: Reference Guide*).

However, if you have access to JMS Message Bus technology, the trigger can simply drop the data to be processed on the bus. See "JMS Connector" in *IBM Directory Integrator 4.7: Reference Guide*.

I have an AssemblyLine with an iterator in it, but some of the entries are skipped. Why?

If you have a Lookup Connectors after your Iterator, the Connector might fail due to no or multiple entries found (see "Failure Hooks" in *IBM Directory Integrator 4.7: Reference Guide*). The failing Lookup Connector causes the AssemblyLine to skip the entry and tells the Iterator to move on with the next entry.

However, if the On Error hook of the Lookup Connector is enabled (see "Enabling/disabling Hooks" in *IBM Directory Integrator 4.7: Reference Guide*), the AssemblyLine thinks the error is taken care of and proceeds. Of course, you must put code there to check whether the error was serious or just acceptable (for example, no entries returned). Checking the content of your attributes is one way, using the `rscTaskComponent` method `getDuplicateEntryCount()` is another.

I have a new version of a script connector (or parser) in the base template library, but my AssemblyLine seems to use an old one.

When you modify a Script Connector (or Parser), the script gets copied from the Library where it resides and into your configuration file. This has the advantage of you being able to customise the script, but with the caveat that new versions are not known to your AssemblyLine.

If your script connector was inserted in the configuration file using an Admint tool with version number 4.6 beta or lower, you have the content of the script copied into your configuration file regardless of whether you have changed it or not. Removing the old script Connector from the AssemblyLine and reintroducing it gets you around this (but remember to copy over code from your hooks).

I have written my own Connector, and it used to work. When I recompile it now, it stops working. Why?

From version 4.6, a new public String `getVersion()` method is mandatory so you can keep track of the version of your Connector.

Another source of problems might appear if you use the same libraries as Integrator. A new version of Integrator might have updated its libraries, or you might have upgraded your libraries since the last time you compiled your Connector.

I want to copy a whole LDAP directory to another. How do I do that?

See "Copying directories with the LDAP Connector" in *IBM Directory Integrator 4.7: Reference Guide*. An example is provided as well.

I need to debug a Script Connector (or other object) where the task object is unavailable. How do I access task.debugMsg() and other log-functionality?

Assuming JavaScript, the task object can be fetched by
`task = java.lang.Thread.currentThread()`

The main object can always be accessed through
`main = connector.getRSInterface()`

Chapter 3. Security

I need support for 128 bits RC4 bulk encryption over SSL. Why is it not supported?

Integrator supports SSL through JSSE (<http://java.sun.com/products/jsse/>). The version delivered with Integrator 4.6 only supports 40 bits RC4 encryption. A newer version (1.0.3) supporting 128 bits RC4 is available and can be downloaded from <http://java.sun.com/products/jsse/index-103.html>.

Refer to the download link to see what other cryptographic suites are supported by 1.0.3 (RSA, DES, Triple DES, Diffie-Hellman, DSA).

I need Third Party SSL Socket Factories. Are those supported?

This is a matter of what version of JSSE (<http://java.sun.com/products/jsse/>) you have. Due to export restrictions, only the Global version of JSSE is delivered with Integrator 4.6. If you reside in the USA or Canada, refer to JSSE home page (<http://java.sun.com/products/jsse/>) to download a more powerful version.

How do I use certificates from Trusted Third Parties?

If you want to use certificates (for example, for connecting to LDAP using SSL), you are given a certificate to authenticate against your source.

Do the following:

1. Go to the Tools menu, select **Certificate Manager...**
2. Select `jssecacerts` as the standard keystore. If you use something else, you must set the the java property `javax.net.ssl.trustStore` to the directory you use.
3. Press the **Import** button to import the certificate (if Integrator doesn't read it, make sure there is a blank line at the end of the file containing the certificate).
4. Give it a name.
5. Save your configuration file.

Notes:

1. Not all Connectors or EventHandlers support certificates. Refer to the individual Connector/ or EventHandler documentation for more information.
2. Certain applications demand higher cipher strength (for example, 128 bits RC4 encryption instead of 40 bits) than the libraries included with Integrator 4.6.

An alternative to having certificates in the form of files is to have them delivered at run-time by a Trusted Third Party (for example, VeriSign).

In the Java world, it is the task of the standard system extension JSSE to handle the abstraction layer between the program (Integrator) and the certificate manager. Your Trusted Third Party provides you with information on how to configure your Java environment correctly.

Chapter 4. Error messages

ERROR> AssemblyLine x failed because No criteria can be built from input (no link criteria specified)

This happens when you have a link criteria like the following:

```
uid equals $w_uid
```

However, the `w_uid` working attribute is not present in the work entry. This might be because it has not been read from the input sources, or was not present in the input sources. In other words, `work.getAttribute("w_uid")` returns null.

One way to avoid this is to write some code to skip the Connector when the link criteria cannot be resolved in the `before_execute` hook of the Lookup or Update Connector that fails. For example:

```
if (work.getAttribute("w_uid") == null)
system.ignoreEntry();
```

Your business logic might require other processing, like a `skipEntry()` call instead of an `ignoreEntry()`. (`skipEntry()` switches to the next entry returned by the current iterator).

Chapter 5. Limitations

I run out of memory, but I have more available. Can something be done?

Increasing the memory available to the Virtual Machine

Some components, such as the XML parser, uses a lot of memory, and the Java VM default has only 64 MB available.

In order to increase the memory available to miserver or miadmin, you can add the following line to miserver.lax or miadmin.lax:

```
lax.nl.java.option.java.heap.size.max=268435456
```

This enables 256 MB memory to be used.

Notes:

1. Your OS might limit how much memory it lets you access. For Unix, use the command **ulimit -a** to see how much you can have. For Windows NT[®], remember that the OS keeps some memory to itself (minimum 128 MB), so even if your server contains 256 MB you might only get access to 100 MB or less.
2. If your memory problems occurred while using and LDAP iterator, see "LDAP Connector" in *IBM Directory Integrator 4.7: Reference Guide* for more tips.
3. A memory leak is known, see "Known issues 4.6" in *IBM Directory Integrator 4.7: Reference Guide* for more on this.

Limiting the number of threads

When using certain EventHandlers (like TCP or HTTP), or when your AssemblyLines begins activating other AssemblyLines which also can activate other AssemblyLines, you might use a lot of memory. See "How to control the number of threads" in *IBM Directory Integrator 4.7: Reference Guide* for more information.

Does Integrator support double-byte character sets?

Integrator is written in Java which in turn supports Unicode (double-byte) characters sets. However, external components like drivers might not support the set.

Scripting languages supported by Windows Scripting Host (WSH) might cause problems when using Unicode character sets.

Chapter 6. Third party software

What version of JavaScript is included?

We are currently using Rhino version 1.4R3 from Mozilla (see <http://www.mozilla.org/rhino/>).

For newer versions of Rhino, it is recommended to upgrade to IBM Directory Integrator 4.7.

Can I use Java 1.4 with Integrator 4.6?

We do not yet support Java 1.4, but you can do the following:

1. Install Java 1.4 on your computer
2. Edit `miadmin.lax` and `miserver.lax` so it has the line
`lax.nl.current.vm=C:\\Program Files\\Java\\j2re1.4.0\\bin\\java.exe`

where `C:\\Program Files\\Java\\j2re1.4.0\\bin\\java.exe` refers to where you placed Java 1.4.

3. Run Integrator as normal.

Usually the above description works, but there have been issues on Windows platforms where you get the message `Could not load jvm.dll` when trying to start `miserver` or `miadmin`. If this happens, try installing the full 4.6.8 version (not patched 4.6.4 version).

Java 1.4 is not supported as Integrator JVM, so you might be on your own if you run into problems. Here are the known problems:

- In the Admin tool, the GUI can look strange around the attribute mapping. (The admin tool is still usable, but it looks really strange). It is still possible to edit with an admin-tool using 1.3.1 and a server using Java 1.4
- The admin tool will give you a warning when creating new config-files. It can be safely ignored.
- If you use Java 1.4, you cannot decrypt configuration files encrypted with Integrator under Java 1.3 with versions prior to 4.6.8
- From 4.6.8, you must edit the `.lax`-files and set
`com.metamerge.securityProvider=
com.metamerge.securityTransformation=DES/ECB/NoPadding`

Appendix. Notices

Trademarks

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This product includes software developed by the Apache Software Foundation (<http://www.apache.org/>).

The IBM Directory Integrator uses Rhino (JavaScript for Java) object code. The source code for Rhino is located at <http://www.mozilla.org/rhino/download.html> and is available under the terms of the Netscape Public License 1.1 (<http://www.mozilla.org/MPL/NPL-1.1.html>). The Rhino source code found on the mozilla Web site was not modified in generating the object code used in IBM Directory Integrator.

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