

Arjuna CLF 2.0

Programmer's Guide

CLF-PG-3/30/10



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Software Version

Arjuna CLF 2.0

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About This Guide

What This Guide Contains

The Programmer's Guide contains information on how to use Arjuna CLF 2.0.

Audience

This guide is most relevant to engineers who are responsible for using Arjuna CLF 2.0 installations.

Organization

This guide contains the following chapters:

1. **Chapter 1, Overview**
2. **Chapter 2, Migration to CLF 2.0**
3. **Chapter 3, Helper Classes**
4. **Chapter 4, The Log Interface**

Documentation Conventions

The following conventions are used in this guide:

Convention	Description
<i>Italic</i>	In paragraph text, italic identifies the titles of documents that are being referenced. When used in conjunction with the Code text described below, italics identify a variable that should be replaced by the user with an actual value.
Bold	Emphasizes items of particular importance.
Code	Text that represents programming code.
Function Function	A path to a function or dialog box within an interface. For example, " Select File Open. " indicates that you should select the Open function from the File menu.
() and	Parentheses enclose optional items in command syntax. The vertical bar separates syntax items in a list of choices. For example, any of the

	<p>following three items can be entered in this syntax:</p> <p><code>persistPolicy (Never OnTimer OnUpdate NoMoreOftenThan)</code></p>
Note: and	A note highlights important supplemental information.
Caution:	A caution highlights procedures or information that is necessary to avoid damage to equipment, damage to software, loss of data, or invalid test results.

Table 1 Formatting Conventions

Overview

CLF 2.0 Architecture

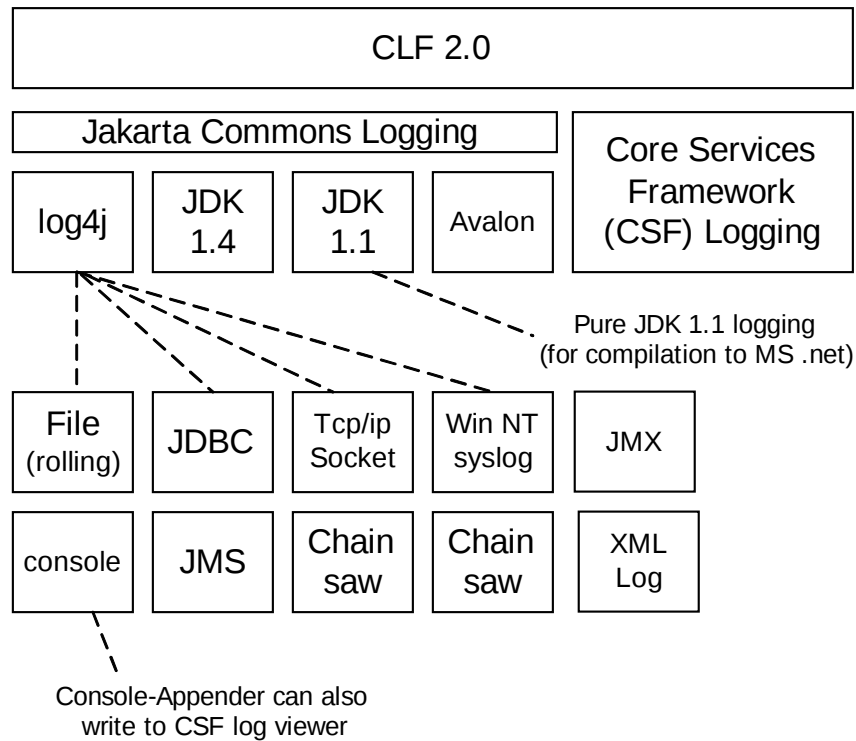


Figure 0-1 CLF 2.0 Architecture

Package Overview: com.arjuna.common.util.logging

Interface Summary

Logi18n	A simple logging interface abstracting the various logging APIs supported by CLF and providing an internationalization layer based on resource bundles.
LogNoi18n	A simple logging interface abstracting the various logging APIs supported by CLF without internationalization support

Class Summary

DebugLevel	The DebugLevel class provides default finer debugging value to determine if finer debugging is allowed or not.
------------	--

FacilityCode	The FacilityCode class provides default finer facilitycode value to determine if finer debugging is allowed or not.
VisibilityLevel	The VisibilityLevel class provides default finer visibility value to determine if finer debugging is allowed or not.
LogFactory	Factory for Log objects.

LogFactory

Factory for Log objects. LogFactory returns different subclasses of logger according to which logging subsystem is chosen. The log system is selected through the property `LoggingEnvironmentBean.loggingFactory`. Supported log systems are:

- **jakarta** Jakarta Commons Logging (JCL). JCL can delegate to various other logging subsystems, such as:
 - log4j
 - JDK 1.4 logging

Log subsystems are not configured through CLF but instead rely on their own configuration files for the setup of eg. debug level, appenders, etc...

Setup of Log subsystem

The underlying log system can be selected in two ways:

- Through the `commonPropertyManager`:
`commonPropertyManager.getLoggingEnvironmentBean.setLoggingFactory(value);`
- As a System property (deprecated) (see following table)

Property Name	Description
<code>LoggingEnvironmentBean.loggingFactory</code>	<p>This property selects the log subsystem to use. Note that this can only be set as a System property, e.g. as a parameter to start up the client application:</p> <pre>java -DLoggingEnvironmentBean.loggingFactory=com.arjuna ..</pre>

Table 2 System property to select the underlying log system to use.

Note: The properties of the underlying log system are configured in a manner specific to that log system, e.g., a `log4j.properties` file in the case that log4j logging is used.

Example: To set off log4j (default log system), provide the following System properties:

```
java
DLoggingEnvironmentBean.loggingFactory="com.arjuna.common.internal.util.logging.jakarta.JakartaLogFactory;com.arjuna.common.internal.util.
```

Getting Started

Simple use example:

```
import com.arjuna.common.util.logging.*;

public class Test
{
    static Log mylog = LogFactory.getLog(Test.class);

    public static void main(String[] args)
    {
        String param0 = "foo";
        String param1 = "bar";

        // different log priorities
        mylog.debug("key1", new Object[]{param0, param1});
        mylog.info("key2", new Object[]{param0, param1});
        mylog.warn("key3", new Object[]{param0, param1});
        mylog.error("key4", new Object[]{param0, param1});
        mylog.fatal("key5", new Object[]{param0, param1});

        // optional throwable
        Throwable throwable = new Throwable();
        mylog.debug("key1", new Object[]{param0, param1}, throwable);
        mylog.info("key2", new Object[]{param0, param1}, throwable);
        mylog.warn("key3", new Object[]{param0, param1}, throwable);
        mylog.error("key4", new Object[]{param0, param1}, throwable);
        mylog.fatal("key5", new Object[]{param0, param1}, throwable);

        // debug guard to avoid an expensive operation if the logger does not
        // log at the given level:
        if (mylog.isDebugEnabled())
        {
            String x = expensiveOperation();
            mylog.debug("key6", new Object[]{x});
        }
    }
}
```

Log Interface

A simple logging interface abstracting the various logging APIs supported by CLF.

The logging levels used by Log are (in order):

1. debug (the least serious)
2. info
3. warn
4. error
5. fatal (the most serious)

The mapping of these log levels to the concepts used by the underlying logging system is implementation dependent. The implementation should ensure, though, that this ordering behaves as expected.

Performance is often a logging concern. By examining the appropriate property, a component can avoid expensive operations (producing information to be logged).

For example,

```
if (log.isDebugEnabled()) {  
    ... do something expensive ...  
    log.debug(...);  
}
```

Configuration of the underlying logging system will generally be done external to the Logging APIs, through whatever mechanism is supported by that system.

Dependencies

Name	Description
commons-logging-1.1.jar	Jakarta Commons Logging JAR
log4j-1.2.14.jar	Log4j Jar file (required when using log4j)

Table 3 Jar file dependencies

Basic File Logging

Overview

Where it is undesirable to have 3rd party dependencies, a simple file based logger may be used.

Setup

Usage of this feature is simple and can be controlled through a set of properties on the `BasicLogEnvironmentBean` instance obtained via `commonPropertyManager`, but can also be set using the system properties below.

Property Name	Values	Description
<code>BasicLogEnvironmentBean.level</code>	Info /error/fatal	Severity level for this log
<code>BasicLogEnvironmentBean.showLogName</code>	true/ false	Record the fully qualified log name
<code>BasicLogEnvironmentBean.showShortLogName</code>	true /false	Record an abbreviated log name
<code>BasicLogEnvironmentBean.showDate</code>	true /false	Record the date
<code>BasicLogEnvironmentBean.logFile</code>	error.log (default)	File to use for default logging. This can be an absolute filename or relative to the working directory
<code>BasicLogEnvironmentBean.logFileAppend</code>	true /false	Append to the log file above in case that this file already exists

Table 4 Properties to control default file-based logging (default values are highlighted)

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