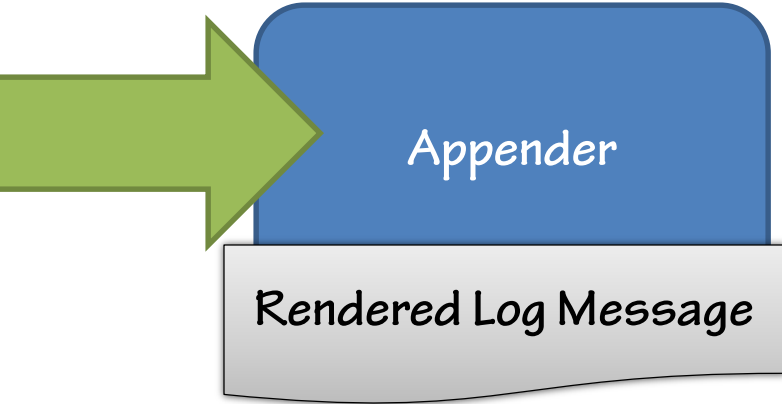


Layouts and Patterns

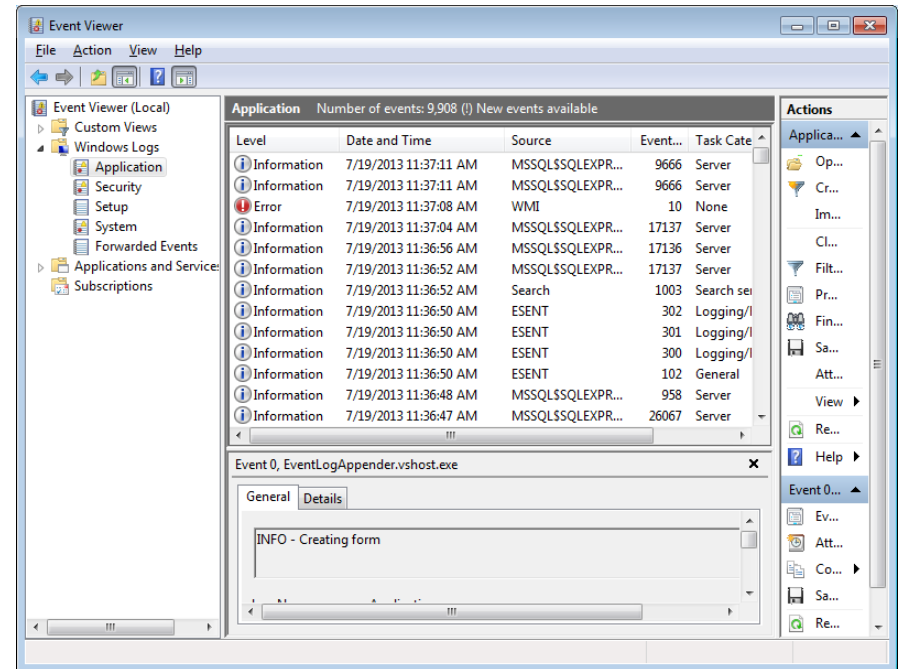
Jim Christopher
@beefarino

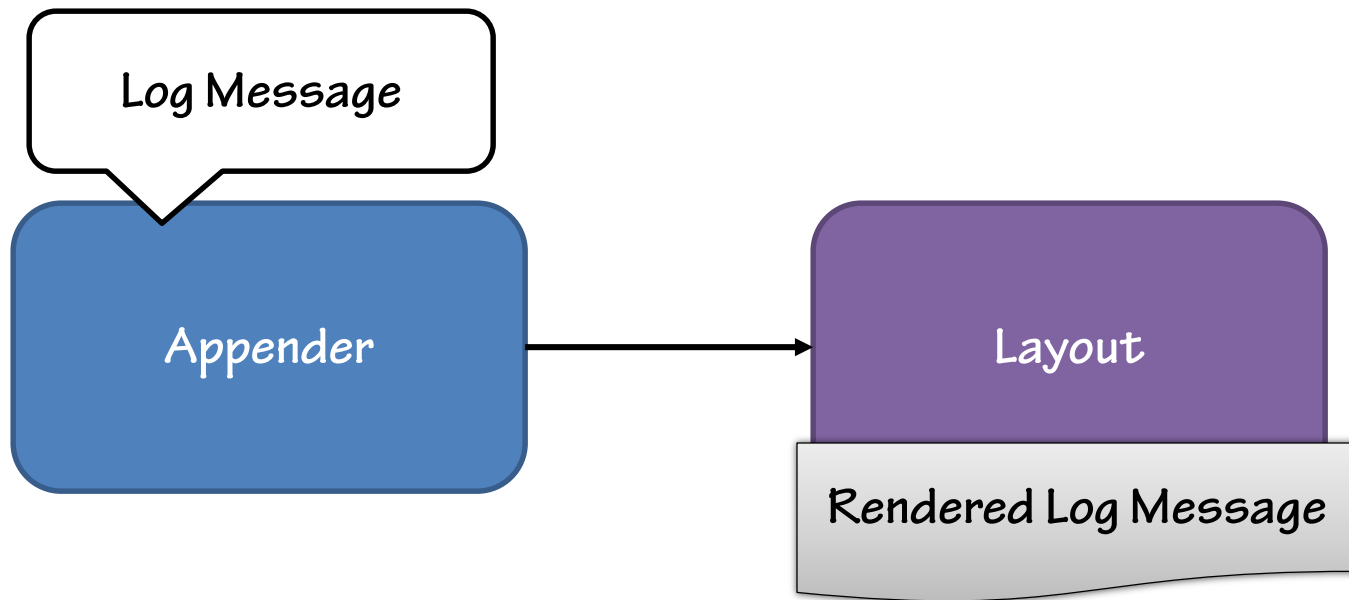




Appender

Rendered Log Message





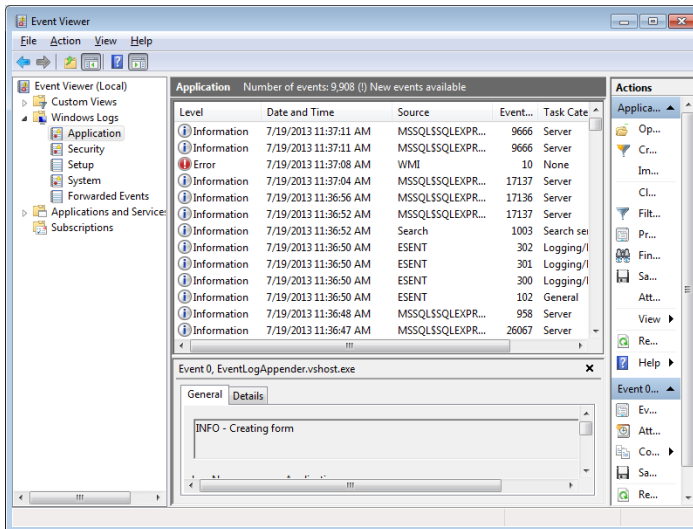
Storage

Appender

Formatting

Layout

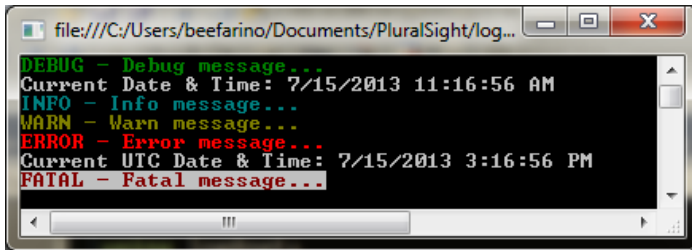
Storage



Formatting

Layout

Storage



A screenshot of a Windows file explorer window showing a log file. The window title is "file:///C:/Users/beefarino/Documents/PluralSight/log...". The log content is as follows:

```
DEBUG - Debug message...  
Current Date & Time: 7/15/2013 11:16:56 AM  
INFO - Info message...  
WARN - Warn message...  
ERROR - Error message...  
Current UTC Date & Time: 7/15/2013 3:16:56 PM  
FATAL - Fatal message...
```

Formatting

Layout

Storage



Formatting

Layout

Common Layout Properties

Header

- Text to append before any log events

Footer

- Text to append after all log events

IgnoreException

- True if the appender should render the exception in the log event (default)
- False if the layout renders the exception

Simple Layout

XML Layout

XML Layout Properties

Base64EncodeMessage

- True to encode message as base64

Base64EncodeProperties

- True to encode event properties as base64

Prefix

- Prefix to use in element names
- Defaults to log4net

InvalidCharReplacement

- String used to represent invalid XML characters
- <http://www.w3.org/TR/REC-xml/#charsets>

LocationInfo

- True to include code-level information in XML

XML Layout

```
<log4net:event  
  logger="XmlLayout.Program"  
  timestamp="2013-07-30T08:43:27.2994895-04:00"  
  level="DEBUG"  
  thread="11"  
  domain="XmlLayout.exe"  
  username="Archimedes\beefarino">  
  <log4net:message>Debug Message...</log4net:message>  
  <log4net:properties>  
    <log4net:data name="log4net:HostName" value="Archimedes" />  
  </log4net:properties>  
</log4net:event>
```

XML Layout

```
<log4net:event  
  logger="XmlLayout.Program"  
  timestamp="2013-07-30T08:43:27.2994895-04:00"  
  level="DEBUG"  
  thread="11"  
  domain="XmlLayout.exe"  
  username="Archimedes\beefarino">  
  <log4net:message>Debug Message...</log4net:message>  
  <log4net:properties>  
    <log4net:data name="log4net:HostName" value="Archimedes" />  
  </log4net:properties>  
</log4net:event>
```

Pattern Layout

Pattern Layout Properties

ConversionPattern

- **Print-f style formatting string used to render the log event**

Conversion Pattern

LOG: [%logger] %-5level - %message%newline

Format Specifiers

LOG: [**%logger**] **%-5level** - **%message%newline**



The diagram illustrates the components of the log format string. Arrows point from the following labels to their corresponding parts in the string: 'logger' points to '%logger', 'level' points to '%-5level', 'message' points to '%message', and 'newline' points to '%newline'. The 'LOG:' prefix and the square brackets are not part of the format specifiers.

Format Modifiers

LOG: [%logger] %-5level - %message%newline



Plain Text

LOG: [%logger] %-5level - %message%newline

```
graph TD; A[Log Message] --> B["LOG: [ %logger ] %-5level - %message%newline"]; A --> C["LOG: [ MyApp.Program ] DEBUG - Program Starting"]; A --> D["LOG: [ %logger ] %-5level - %message%newline"];
```

Log Message

LOG: [%logger] %-5level - %message%newline
LOG: [MyApp.Program] DEBUG - Program Starting

Complete Conversion Pattern Specification

<http://bit.ly/12YuBgE>

Format Specifier	Rendering
appdomain	Friendly name of the AppDomain in which the logging event was generated.
date	Local datetime instant of the log event.
exception	Any exception in the log event.
file	The file name containing the code that created the log event.
identity	The user name for the current user.
location	Code location information (file, line number, calling method) where the log event was instantiated.
level	The level of the logging event.
line	The line number from where the logging request was issued.
logger	The name of the logger that created the logging event.
message	The message in the log event.
method	The method name in which the log event was created.
newline	Newline separator
stacktrace	The stacktrace leading up to the log event.
timestamp	The number of milliseconds since application start when the log event was created.
thread	The name or number of the thread that generated the log event.
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Format Modifier	Rendering
<code>%number</code>	Minimum width of field in characters, right-justified value

%5level

[INFO]

Format Modifier	Rendering
%number	Minimum width of field in characters, right-justified value
%-number	Minimum width of field in characters, left-justified value

%-5level

[INFO]

Format Modifier	Rendering
<code>%number</code>	Minimum width of field in characters, right-justified value
<code>%-number</code>	Minimum width of field in characters, left-justified value
<code>%.number</code>	Maximum length of field in characters, excess truncated from beginning

`%.10logger`

Application.Program



Format Modifier	Rendering
<code>%number</code>	Minimum width of field in characters, right-justified value
<code>%-number</code>	Minimum width of field in characters, left-justified value
<code>%.number</code>	Maximum length of field in characters, excess truncated from beginning

`%.10logger`

`Application.Program`

Format Modifier	Rendering
%number	Minimum width of field in characters, right-justified value
%-number	Minimum width of field in characters, left-justified value
%.number	Maximum length of field in characters, excess truncated from beginning

%10.15logger

Complete Conversion Pattern Specification

<http://bit.ly/12YuBgE>

Simple

Simple

Minimal
Log

XML

Structured

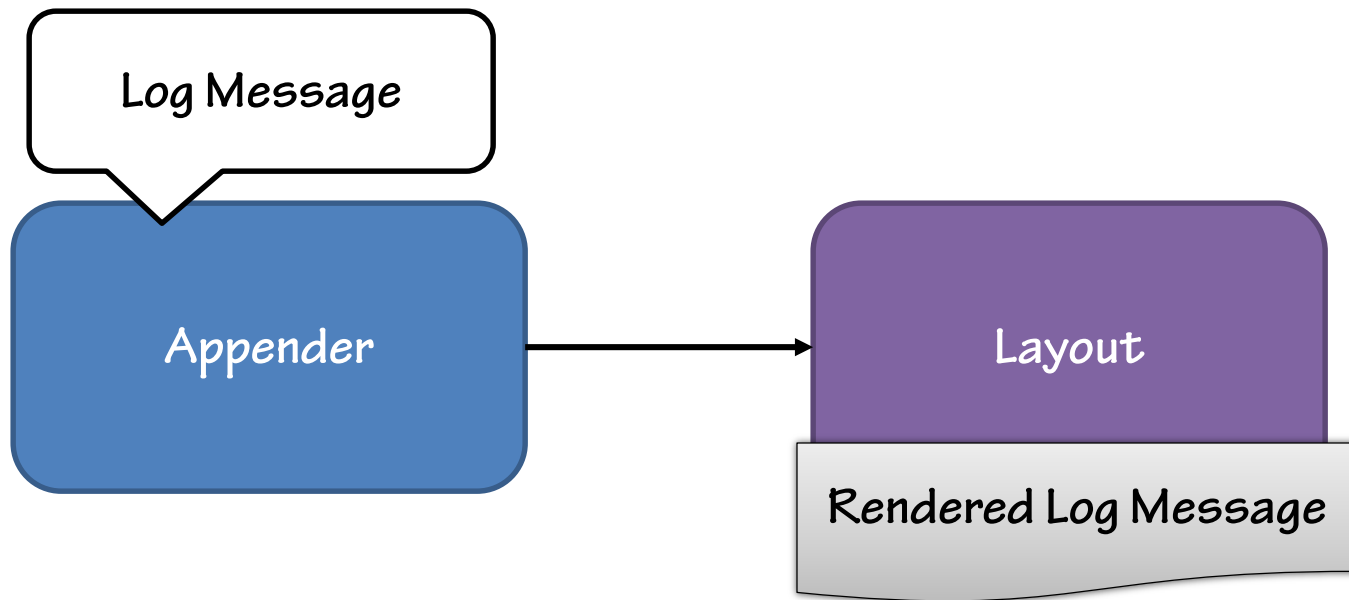
Expensive
by default

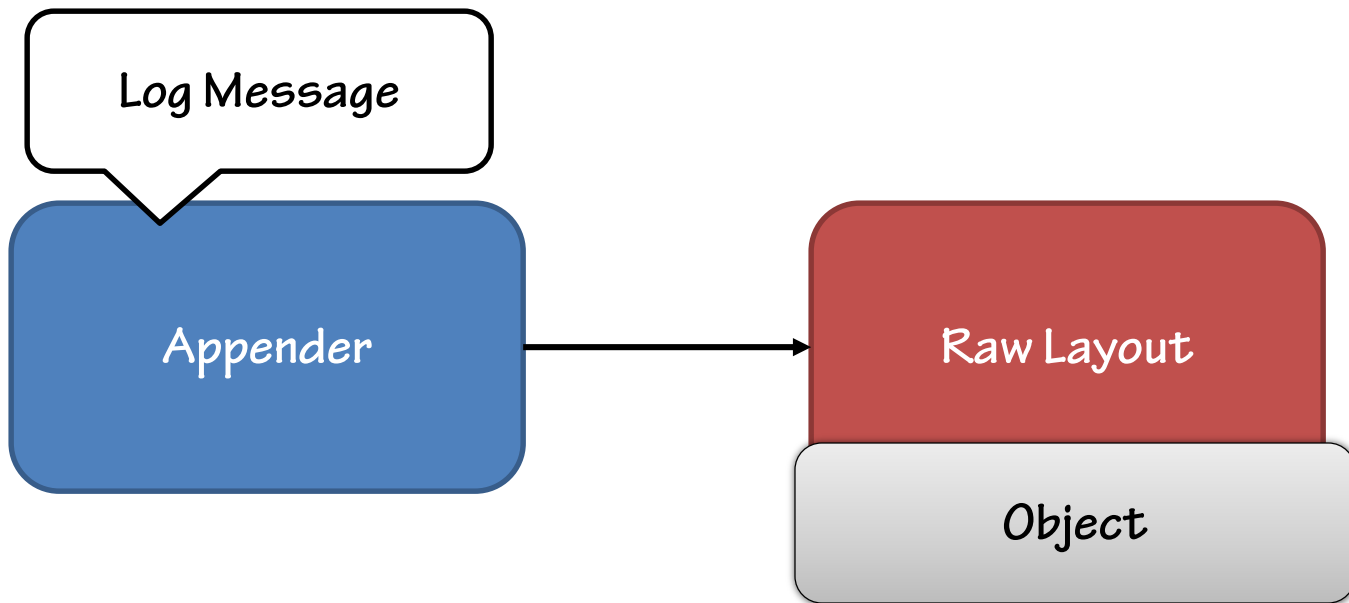
Pattern

Flexible

Print-f
Syntax

Raw Layouts





RawTimeStamp

DateTime

**Local
Time**

RawUtcTimeStamp

DateTime

UTC Time

Layout and Patterns

- **Simple Layout**
 - No configuration
 - Minimal log

Layout and Patterns

- **Simple Layout**
 - No configuration
 - Minimal log
- **XML Layout**
 - Structured XML log
 - Incomplete XML
 - Expensive properties

Layout and Patterns

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Layout and Patterns

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 - Conversion Pattern
 - Format Specifications
 - Format Modifiers
- **Raw Layouts**
 - .NET Objects
 - RawTimeStamp & RawUTCTimeStamp Layouts