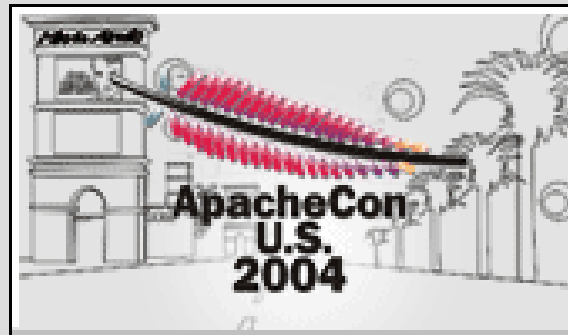


# Using XSL and mod\_transform in Apache Applications

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# What is XSL?

- Extensible Stylesheet Language (XSL)
- A family of Standards for XML by the W3C:
  - XSL Transformations (XSLT)
  - XML Path Language (XPath)
  - XSL Formatting Objects (XSL-FO)

# XSLT Example

```
<?xml version="1.0"?>
<xsl:stylesheet
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
  version="1.0">

<xsl:template match="/">
  <html>
    <head><title>A Message</title></head>
    <body>
      <h1>
        <xsl:value-of select="message" />
      </h1>
    </body>
  </html>
</xsl:template>
</xsl:stylesheet>
```

# Data Source...

```
<?xml version="1.0"?>  
<message>Hello World</message>
```

# Outputs...

```
<html>
<head>
<meta http-equiv="Content-Type"
      content="text/html; charset=UTF-8">
<title>A Message</title>
</head>
<body>
<h1>Hello World</h1>
</body>
</html>
```

# Why is XSLT good?

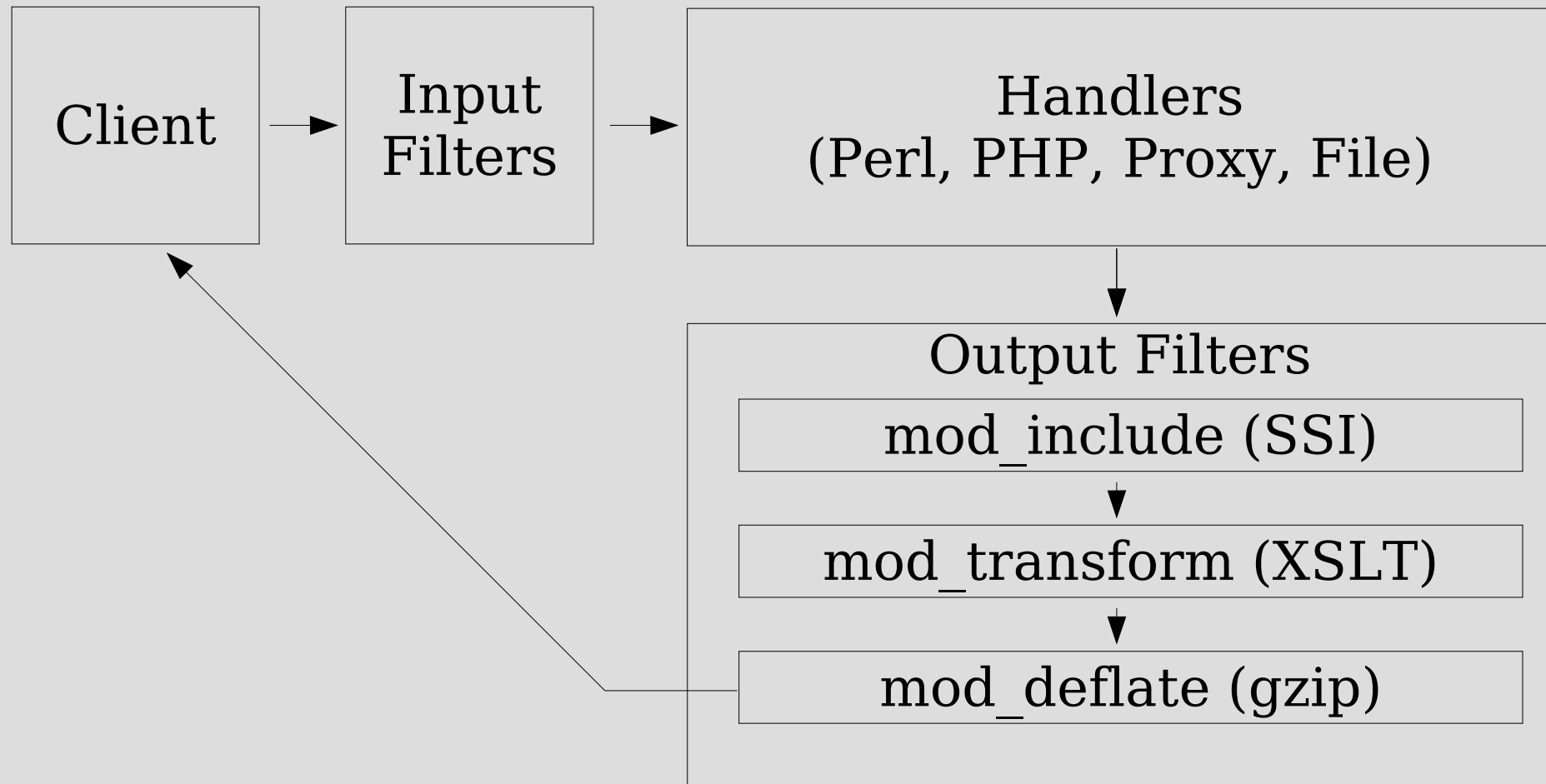
- Mixing Data and Presentation is **bad!**
  - Keeps Data in a clean XML schema
  - Keeps the Presentation of this Data separate
- XSLT is XML
- Easy to Extend
- Put HTML or other Markups directly in the XSLT.
  - Easy for Web Developers to create a template

# Why is XSLT bad?

- XSLT is XML
- Complicated XSLT can be slow
- Yet another language to learn

# Where does Apache fit in this?

- Apache 2.0 has Filters!





# mod\_transform

- Uses libXML2 and libXSLT from Gnome
  - C API
    - Doesn't depend on other Gnome Libs.
  - Provides:
    - EXSLT
    - XInclude
    - XPath
    - Xpointer
    - ... and more

# Static XML Files

- AddOutputFilter XSLT .xml
- TransformSet /xsl/foo.xsl
  - Only if your XML does not specify a XSL File
- TransformOptions +ApacheFS
  - Uses Sub-Requests to find files
  - Makes mod\_transform work like Apache AxKit

# Dynamic Sources

- XML Content Types:
  - AddOutputFilterByType XSLT application/xml
- Controlled Content Types:
  - AddOutputFilterByType XSLT applicain/needs-xslt
- Works for Proxied Content, PHP, mod\_perl, mod\_python, CGI, SSI, etc..
  - mod\_filter
    - In 2.1 CVS!

# PHP

- Content Type
- With a Patch
  - PHP can manually add output filters
    - `apache_add_output_filter("XSLT");`
  - List Active Filters
    - `apache_get_output_filters();`

# PHP Example

```
<?php
    apache_add_output_filter("XSLT");

    echo "<?xml version='1.0'?>\n";
    echo "<?xml-stylesheet type='text/xsl'
href='./demo.xsl'?>\n";
    echo "<demo>\n";

    $filters = apache_get_output_filters();

    foreach($filters as $filter) {
        echo "<filter>$t_val</filter>\n";
    }

    echo '</demo>';
?>
```

# Apache Module

- Direct:
  - `ap_add_output_filter("XSLT", NULL, r, r->connection);`
- By Content Type:
  - `ap_set_content_type(r,"application/xml");`
- Passing a libXML2 Document Tree:
  - `mod_transform_XSLTDoc(r, doc) ;`

# mod\_svn\_view

- Uses mod\_transform
- Provides a web based view using the Native Subversion C libraries

# SVN View

[Repo List] - [gentoo]/ apache-overlay

## Property Value

[no properties set]

	Filename	Revision	Username	Message
[dir]	<a href="#">profiles</a>	321	Hollow	* changed apache-mod...
[dir]	<a href="#">scripts</a>	336	beu	* new tool: - simple...
[dir]	<a href="#">docs</a>	269	stuart	Added web-handbook a...
[dir]	<a href="#">dev-util</a>	366	trapni	renamed subversion 1...
[dir]	<a href="#">dev-php</a>	309	beu	update manifest.
[dir]	<a href="#">dist</a>	369	vericgar	Fixing default confi...
[dir]	<a href="#">www-apache</a>	367	trapni	version bump
[dir]	<a href="#">dev-libs</a>	356	chip	APR-1.0 ebuilds now ...
[dir]	<a href="#">net-www</a>	368	Hollow	version bump
[dir]	<a href="#">eclass</a>	358	urilith	Cleaning up the ecla...
[dir]	<a href="#">irc</a>	347	Hollow	* assigned more spec...
[dir]	<a href="#">dev-perl</a>	258	trapni	did an s,extramodule...
[file]	<a href="#">ChangeLog</a>	159	mtindal	Final commit for tre...
[file]	<a href="#">skel.apache1.ebuild</a>	337	Hollow	* many many mod_* eb...



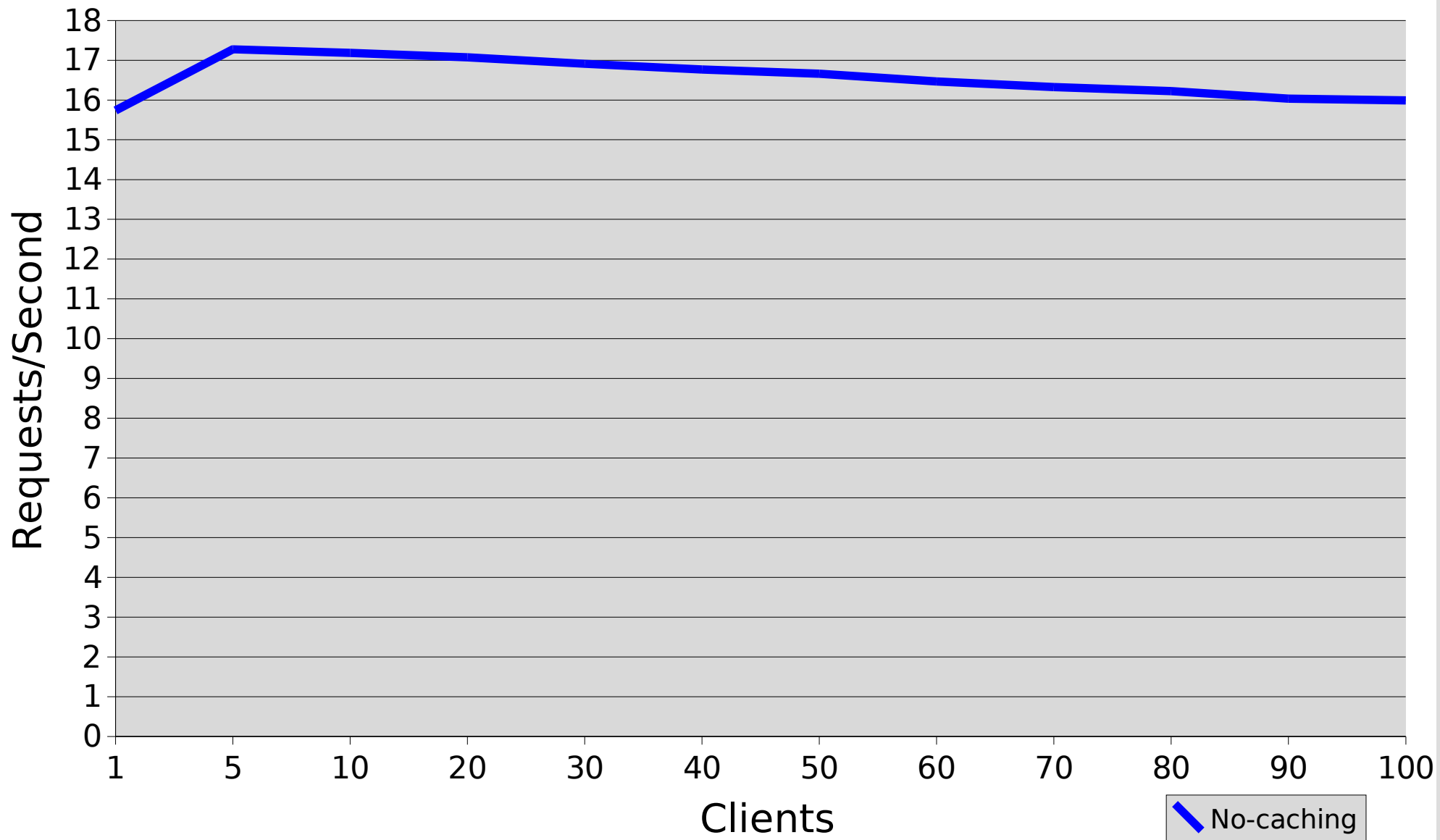
# Performance Issues

- Parsing the XSLT with libXSLT is slow
  - mod\_transform can cache the XSL Files
- Parsing the XML to a libxml2 is slow
  - Applications can pass a docPtr in memory
- Doing the Transform itself is slow
  - mod\_cache can capture the output

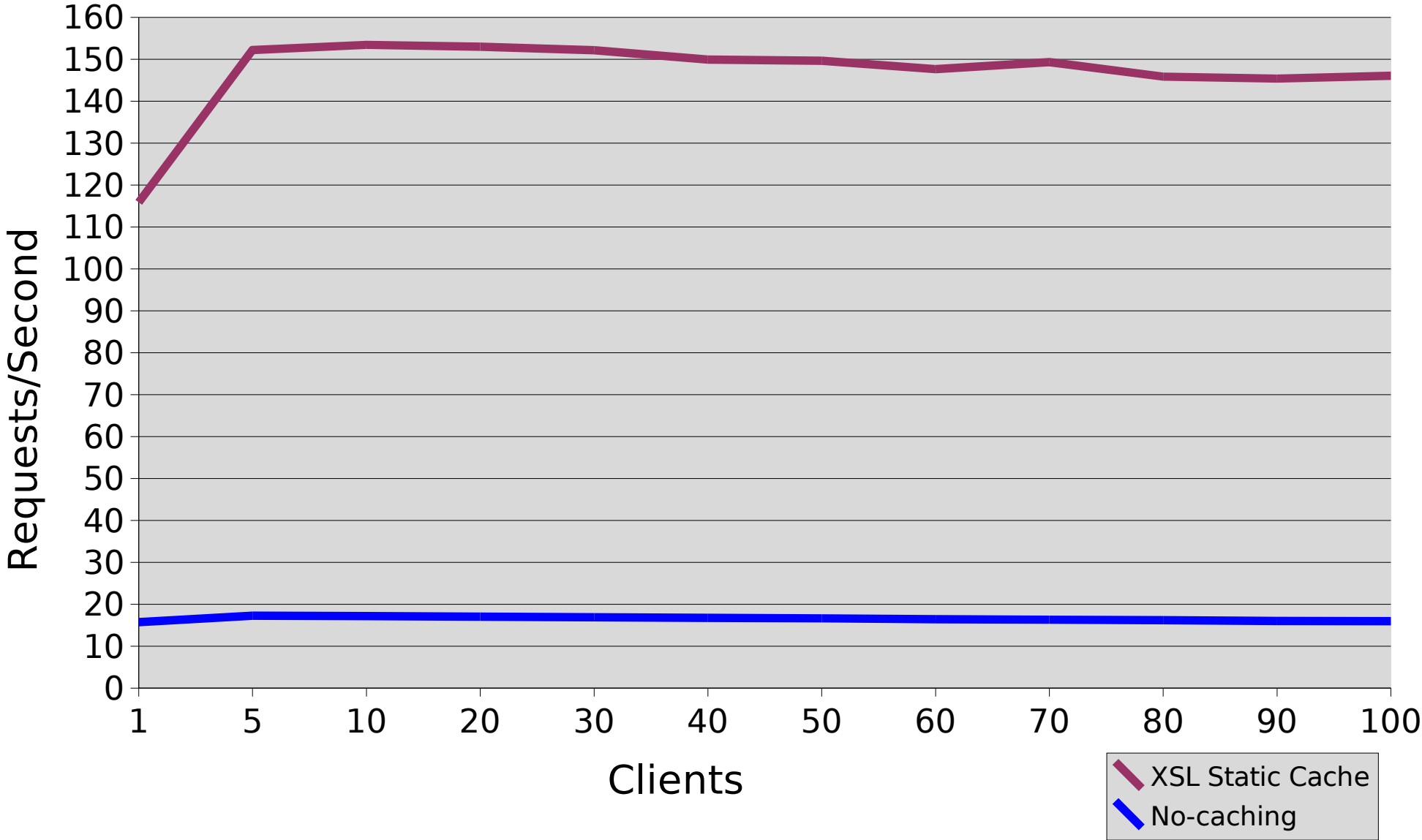
# Benchmarks!

- Your Millage May Vary
  - Test to you environment/hardware/software

# No Caching



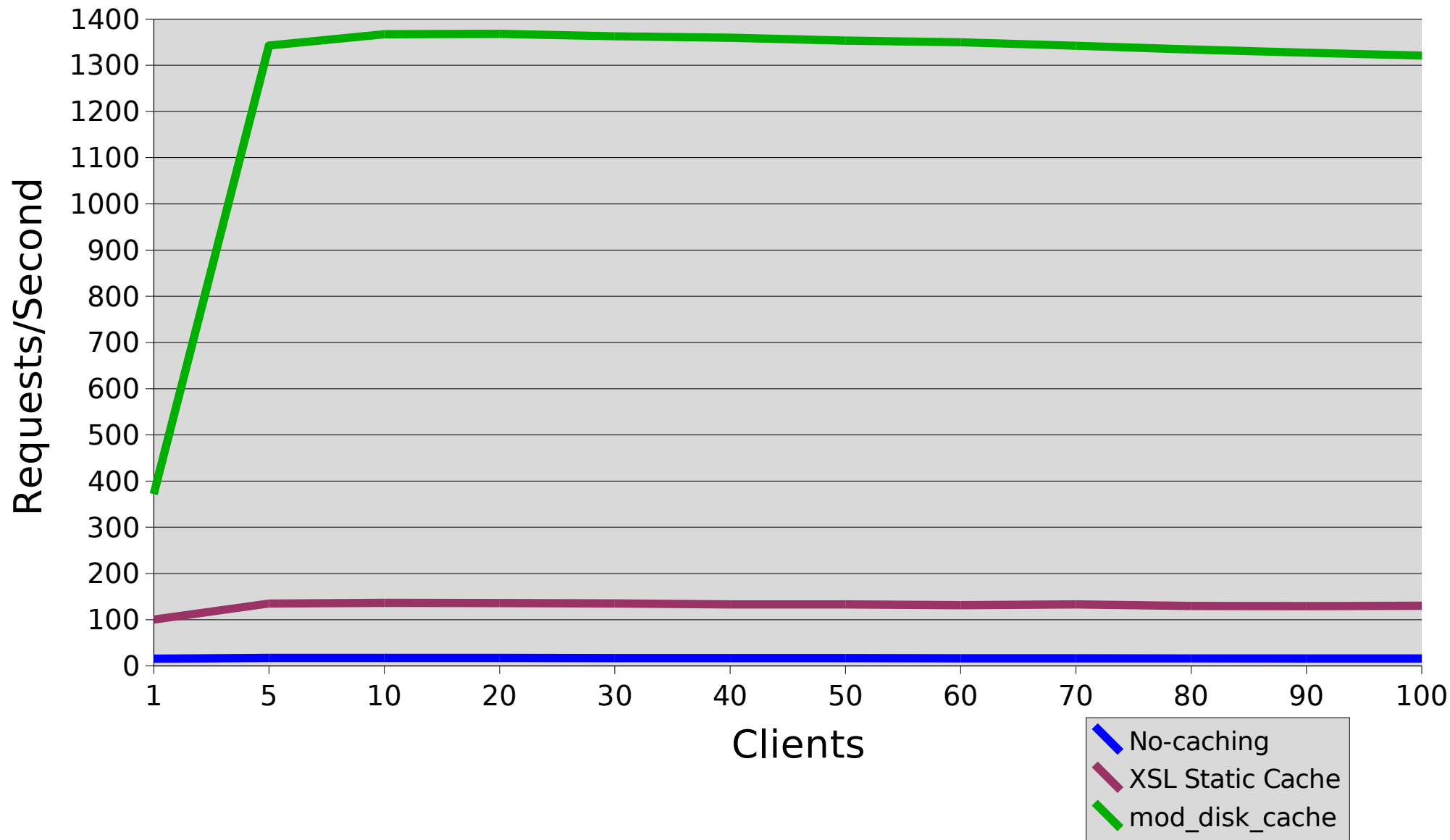
# XSL Static Cache



# XSL Static Cache Issues

- Does not see changed XSL Files
  - Not a big issue on production servers
  - Only sees changes on an Apache Restart
- 'Lowest Hanging Fruit' to improve performance

# mod\_cache



# mod\_cache Issues

- mod\_cache:
  - Doesn't have any dependency checks
    - Changed content is not seen!
    - Changed XML Files are not noticed!
    - Changed XSL Files are not noticed!
  - Can be fixed
    - Etag Generation
      - In the ~/TODO
      - Slower, but should still be faster than running the XSL

# Alternatives

- mod\_php / mod\_perl / mod\_python
  - Can use libXSLT
- mod\_ext\_filter
  - Use an external Process
    - Performance?
- Apache AxKit
  - Apache 1.3 Only
  - Requires mod\_perl
  - Cannot transform content from other Handlers



# Alternatives

- mod\_xmlns / mod\_publisher
  - Still in development
  - Framework for a custom template system
- Modxslt2
  - Provides Extra Features
    - Access to Query Arguments and POST
  - ~10,000 LOC

# Future Development

- Dependency Trees – mod\_depends
  - Etags
  - LastModified
- Access to Query Arguments and POST
- Dynamic XSL Caching

# Resources

- Slides, mod\_transform, PHP Patch:
  - <http://www.outoforder.cc>
- LibXML2:
  - <http://xmlsoft.org/>
- LibXSLT:
  - <http://xmlsoft.org/XSLT/>
- Apache AxKit
  - <http://axkit.org/>

# Resources

- mod\_publisher / mod\_xmlns
  - <http://apache.webthing.com>
  - [http://apache.webthing.com/mod\\_publisher/](http://apache.webthing.com/mod_publisher/)
- Modxslt2
  - <http://www.mod-xslt2.com/>

# Thanks!

- mod\_transform co-authors:
  - Nick Kew
  - Edward Rudd

## Questions?