*Compaq ActiveAnswers*

## Technical Guide

**Contents**

# Microsoft FrontPage Server Extensions Using Apache Web Server on Linux

**Abstract:** Internet Service Providers (ISPs) that provide web server support for the Microsoft FrontPage web authoring tool can attract customers who prefer to use that tool for authoring their web sites.

This document describes how to install and configure the Microsoft FrontPage Server Extensions kit into the Apache Web server running on a Linux/Intel platform.

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Microsoft FrontPage Server Extensions Using Apache Web Server on Linux
Technical Guide prepared by Internet and E-Commerce Solutions Business Unit

Enterprise Solutions Division

First Edition (June 1999)
Document Number ECG516/0599

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# 1 Overview

A business never likes to turn down potential customers. This document will describe how to add support for the Microsoft FrontPage Server extensions so the Internet Service Provider can attract customers who want to use all of the functionality of the Microsoft FrontPage product.

The FrontPage Server extensions allow users of the FrontPage client to perform simple CGI and authoring operations on the web server. Examples of server side programs are a simple page hit counter, a guest book and a simple search engine. The FrontPage client also uses the HTTP 1.1 PUT protocol to upload files to the user's directory on the server.

Microsoft announced that the future direction for web authoring will be through the Internet Engineering Task Force (IETF) draft standard named WebDAV, or Web Distributed Authoring and Versioning, extension to the HTTP protocol. See the following Microsoft press announcement:

http://www.microsoft.com/presspass/press/1998/oct98/webdavpr.htm

Apache developers have already announced availability of the Apache module `mod_dav` that implements the WebDAV protocol. For more information, see the ApacheWeek web site:

http://www.apacheweek.com/issues/98-11-06#dav

# 2  Sizing an Apache Web Server

This section will help you determine the requirements for hosting a Apache web server. See the *Virtual Web Hosting Using the Apache Web Server on Linux* document at the Compaq ActiveAnswers web site (http://www.compaq.com/activeanswers/) for more information about implementing virtual web hosting services.

## 2.1  Standard Configurations

This document is applicable to the Compaq ProLiant 1850R, the ProLiant 1600, ProLiant 1600R, and the Prosignia 720 servers.

The most popular configurations for ISPs doing web hosting or virtual web hosting is the ProLiant 1850R because of its sleek 3U rack-mounted design for high-density web farms and option of a second Pentium CPU.

**Note:**  The ProLiant 1850R is only available in a rack-mount configuration.

The ProLiant 1600 is a tower configuration.  The ProLiant 1600R is the rack mount variant.

The Prosignia 720 is not rack mountable.

The Prosignia and ProLiant servers used for testing come equipped with standard peripheral devices for which drivers already exist for Linux.  Each server is outlined in the following table.

**Table 1.  Prosignia/ProLiant Servers**

| Feature | Prosignia 720 | ProLiant 1600 | ProLiant 1600R | ProLiant 1850R |
|---|---|---|---|---|
|  |  |  |  |  |
| Processor Speeds | 350, 400, 450 MHz | 350, 400, 450, 500 MHz | 350, 400, 450, 500 MHz | 400, 450, 500 MHz |
| SMP Support | No | Yes | Yes | Yes |
| L2 Cache | 512 KB | 512 KB | 512 KB | 512 KB |
| Maximum Memory | 384 MB | 1 GB | 1 GB | 1 GB |
| Maximum Number of Drives | 3 | 5 1"-hot swap or 2 1.6" and 1 1" hot swap plus 2 internal 5.25" bays | 5 1"-hot swap or 2 1.6" and 1 1" hot swap plus 2 internal 5.25" bays | 3 1"- or 2 1.6"-hot swap plus 2 internal 5.25" bays |
| Drive Sizes Supported | 4.3 & 9.1 GB | 4.3 & 9.1 GB (1") & 18.2 GB (1.6") hot-plug, 4.3 & 9.1 GB non-hot-plug | 4.3 & 9.1 GB (1") & 18.2 GB (1.6") hot-plug, 4.3 & 9.1 GB non-hot-plug | 4.3 & 9.1 GB (1") & 18.2 GB (1.6") hot-plug, 4.3 & 9.1 GB non-hot-plug |
| Disk Controller | Wide Ultra2 SCSI | Wide-Ultra SCSI 3 (dual-channel) | Wide-Ultra SCSI 3 (dual-channel) | Wide-Ultra SCSI 3 (dual-channel) |
| Disk Controller | NCR 53c8xx | NCR 53c8xx | NCR 53c8xx | NCR 53c8xx |

| Feature | Prosignia 720 | ProLiant 1600 | ProLiant 1600R | ProLiant 1850R |
|---|---|---|---|---|
| Chipset | | | | |
| Maximum Internal Storage | 27.3 GB | 45.5 GB (hot-swap only) or 63.7 GB (hot-swap plus internal) | 45.5 GB (hot-swap only) or 63.7 GB (hot-swap plus internal) | 36.4 (2x18.2 GB) hot-swap only or 54.6 (2x18.2 GB hot swap plus 2x9.1 GB internal) |
| CD-ROM | IDE | IDE | IDE | IDE |
| Diskette Drive | IDE | IDE | IDE | IDE |
| Total PCI Expansion Slots (total \| available) | 3 \| 2 | 2 \| 2 | 2 \| 2 | 3 \| 3 |
| Total PCI/ISA Expansion Slots (total \| available) | 1 \| 1 | 4 \| 4 | 4 \| 4 | 1 \| 1 |
| Total ISA Expansion Slots (total \| available) | 1 \| 1 | 0 | 0 | 0 |
| Total AGP Expansion Slots (total \| available) | 1 \| 1 | 0 | 0 | 0 |
| Integrated NIC Brand Name | Netelligent 10/100 TX Embedded UTP Controller | Compaq Netelligent 10/100 TX Embedded UTP Controller | Compaq Netelligent 10/100 TX Embedded UTP Controller | Compaq 10/100 PCI Embedded UTP Controller |
| Integrated NIC Chipset | Intel 8255x | ThunderLan | ThunderLan | ThunderLan |
| Redundant Fans | No | No | No | No |
| Redundant Power Supply | No | Optional Hot-Pluggable Redundant | Optional Hot-Pluggable Redundant | Optional Hot-Pluggable Redundant |
| Power Supply | 200 W | 325 W | 325 W | 225 W |
| Ostensible Pre-Failure Warranty | Processor, Hard Drive | Processor, Memory, Hard Disk | Processor, Memory, Hard Disk | Processor, Memory, Hard Disk |
| Form Factor | Tower | Tower | 5U Rack-Mount | 3U Rack-Mount |
| Video | 1024 KB, 1024x768 pixel resolution at 256 colors | 1024 KB, 1024x768 pixel resolution at 256 colors | 1024 KB, 1024x768 pixel resolution at 256 colors | 1024 KB, 1024x768 pixel resolution at 256 colors |
| Video Card | ATI Rage Iic | Cirrus Logic 5430 | Cirrus Logic 5430 | ATI Rage IIc |
| Mouse | PS/2 | PS/2 | PS/2 | PS/2 |
| Keyboard | PS/2 Style | PS/2 Style | PS/2 Style | PS/2 Style |

## 2.2  Sizing Tool

The sizing and configuration information has been developed using testing and performance data as well as best practices business rules gathered in Compaq laboratories and the Compaq ISP Competency Centers.

Use the online web server sizing tool available at the Compaq ActiveAnswers web site for *Apache Web Server on Linux* or the *ISP Infrastructure on Linux* page.

# 3  Installing and Configuring FrontPage Server Extensions

Install Microsoft FrontPage Server Extensions as follows:

1.  Obtain the Apache web server source kit.

2.  Build, configure, install and test the Apache web server.

3.  Purchase a Microsoft FrontPage Client kit – this is needed to verify that the server extensions are working properly.

4.  Obtain the Microsoft FrontPage server extension kit.

5.  Modify the Apache web server configuration files so Microsoft FrontPage can be installed.

6.  Install Microsoft Frontpage Server Extensions using the simple case install.

7.  Test with FrontPage client to verify that the basic functionality is working.

8.  Obtain the mod_frontpage source.

9.  Patch, build, install, and test the Apache web server.

10. Test with FrontPage client again to verify that the patched version of the Apache web server is working

## 3.1  Obtaining the Apache Web Server Sources

The central repository for the Apache web server source is http://www.apache.org.  If possible use a mirror that is closer.  The Apache group provides a handy way to find a closer mirror.  The URL `http://www.apache.org/dyn/closer.cgi` will present you with a list of alternate sites.  Downloading a kit using the FTP protocol is typically faster than using HTTP.

Compaq maintains an Apache mirror at: `http://www3.service.digital.com/apache` or by anonymous FTP at `www3.service.digital.com`

If the `wget` tool is installed on your Linux system, use the following command to pull a copy of the kernel sources:

```
# cd /usr/src/
# wget -c ftp://www.apache.org/apache/dist/apache_1.3.6.tar.gz
```

## 3.2  Building Apache Web Server

Unfortunately various Linux distributions have compiled the default Apache server to put files in different places.  We recommend using the new standard locations that Apache now uses by default.  If it is not acceptable for your site, see "`./configure -help`" for the appropriate options to change the location of various Apache files.  The status and info modules are optional, but are useful for monitoring performance and configuration of the Apache web server.

```
# tar zxvf apache_1.3.6.tar.gz
# cd apache_1.3.6/
# ./configure --prefix=/usr/local/apache \
            --enable-module=status \
            --enable-module=info
# make
```

### 3.2.1  Removing an existing Apache installation

If you are running a Linux server from an RPM-based distribution, the Apache web server may already be installed.  You should stop and remove the old version before installing the newly built version as follows:

```
# apachectl stop
```

(or use "**killall httpd**" if apachectl is not available)

```
# rpm -qa | grep apache
apache-1.3.3-1
apache-devel-1.3.3-1
# rpm -e apache-1.3.3-1 apache-devel-1.3.3-1
```

If other apache components have been installed, you will get a warning about dependencies on other packages.  They will have to be removed first. See the RPM man page ("man rpm") for information about using this tool.

```
# rpm -e mod_perl-1.15-3 mod_php-2.0.1-5 mod_php3-3.0.5-2
# rpm -e apache-1.3.3-1 apache-devel-1.3.3-1
```

If your site requires the mod_perl or PHP3  modules, you will have to obtain and install them.  It is beyond the scope of this document.  For more information about integrating the perl programming language into your Apache server, see http://perl.apache.com.  Information about the server-side HTML embedded scripting language PHP may be found at http://www.php.net .

### 3.2.2  Installing the new Apache server

Once you have stopped any Apache server processes that may have been running, you  can install the newly built images.

```
# make install
```

After you have installed the new version of apache, edit httpd.conf the Apache configuration file.  The default location is /usr/local/apache/conf/httpd.conf.

## 3.3  Obtaining a Microsoft FrontPage Client Kit

You will need to purchase a copy of the Microsoft FrontPage 98 for Windows or Microsoft FrontPage 1.0 for Macintosh.  It is readily available at retail computer stores.

## 3.4  Obtaining a Microsoft FrontPage Server Extension Kit

Microsoft does not charge for the FrontPage Server Extensions and they can be downloaded directly from Microsoft.  The starting place to find them is at the FrontPage Home: http://www.microsoft.com/frontpage/

From there follow the links to the "Technical Information" section: http://www.microsoft.com/frontpage/techinfo.htm and then on to "Information about the FrontPage Server Extensions" which goes to http://officeupdate.microsoft.com/frontpage/wpp/ which gives a link to "DOWNLOAD the Server Extensions" license.

After you accept the FrontPage 98 Server Extensions End User License Agreement, it will take you to the kit download page: http://officeupdate.microsoft.com/frontpage/wpp/exts.htm

From the "FrontPage 98 Server Extensions for UNIX - Install Scripts" section, download the files named fp_install.sh and change_server.sh.  Also download fp30.linux.tar.Z under the "Server Extensions for UNIX-version 3.0.2.1330euro" section.  Put the files in the directory /usr/src/frontpage/ for use later.

## 3.5  Modifying the Apache Configuration Files for FrontPage Installation

The FrontPage server extension installation script makes a number of assumptions about the way an Apache web server configuration file is structured.  It is simpler to reconfigure Apache than to fix the installation script.

The summary of changes is:

- Must use srm.conf and access.conf Apache configuration files.  You cannot use just the complete integrated httpd.conf that newer versions of Apache recommend.  Uncomment the two lines for the ResourceConfig and AccessConfig from the httpd.conf configuration file.

```
# In the standard configuration, the server will process httpd.conf,
# srm.conf, and access.conf in that order.  The latter two files are
# now distributed empty, as it is recommended that all directives
# be kept in a single file for simplicity.  The commented-out values
# below are the built-in defaults.  You can have the server ignore
# these files altogether by using "/dev/null" (for Unix) or
# "nul" (for Win32) for the arguments to the directives.
#
ResourceConfig conf/srm.conf
AccessConfig conf/access.conf
```

- srm.conf must contain the settings for DocumentRoot and UserDir.  Move the following lines from httpd.conf to srm.conf.  Additionally the setting for DocumentRoot cannot contain double quotes.

```
# DocumentRoot: The directory out of which you will serve your
# documents. By default, all requests are taken from this directory, but
# symbolic links and aliases may be used to point to other locations.
#
DocumentRoot /usr/local/apache/htdocs
#
# UserDir: The name of the directory which is appended onto a user's home
# directory if a ~user request is received.
#
UserDir public_html
```

- ServerRoot in httpd.conf cannot contain double quotes.

```
# ServerRoot: The top of the directory tree under which the server's
# configuration, error, and log files are kept.
#
# NOTE!  If you intend to place this on an NFS (or otherwise network)
# mounted filesystem then please read the LockFile documentation
# (available at <URL:http://www.apache.org/docs/mod/core.html#lockfile>);
# you will save yourself a lot of trouble.
#
# Do NOT add a slash at the end of the directory path.
#
ServerRoot /usr/local/apache
```

- For all web spaces using the FrontPage server extensions, AllowOverride must be set to AuthConfig.  This allows the FrontPage server extensions to rely on Apache to perform authentication based on .htaccess files.

```
<Directory />
```

```
     Options FollowSymLinks Includes
     AllowOverride None AuthConfig
</Directory>
```

This has an impact on the performance of the web server because, for each HTTP request, the Apache web server must open and process the .htaccess file.

## 3.6  Installing the FrontPage Server Extensions

The next step is to invoke the installation script for the FP extensions.  Make sure you are in the directory where you unpacked the kit, and then run the script.

```
# pwd
/usr/src/frontpage
# sh fp_install.sh

Setting umask 002
Logged in as root.

fp_install.sh

Revision: 1.43
Date: 1997/10/19

This script will step the user through upgrading existing and installing
new servers and webs.  As with any software installation, a backup should
be
done before continuing.  It is recommended that the FrontPage
installation
directory, server configuration file directory, and all web content be
backed up before continuing with this installation.

Are you satisfied with your backup of the system (y/n) [N]?  y

Directory /usr/local exists.
Root has necessary access to /usr/local.
```

The install script installs the FrontPage Extensions to the usr/local/fp.

```
Where would you like to install the FrontPage Extensions.  If you
select a location other than /usr/local/frontpage/ then a symbolic
link will be created from /usr/local/frontpage/ to the location that
is chosen.

FrontPage Extensions directory [/usr/local/frontpage/]: <return>
Creating /usr/local/frontpage
Directory /usr/local/frontpage has been created.
Directory /usr/local/frontpage chmoded to 755.

Version 3.0 FrontPage Server Extensions not found.
Looking for tar file...
Platform is linux.
Uncompressing/Untarring file /usr/src/frontpage/fp30.linux.tar.Z into
/usr/local...
```

The script now checks for previous installations and will upgrade if needed.

```
Checking for existing web servers to upgrade...
No existing web servers found to upgrade.

Note: If you have not installed the root web then you need to do it now.

Do you want to install a root web (y/n) [Y]?  Y

Installing the root web...
```

```
Server config filename:  /usr/local/apache/conf/httpd.conf
FrontPage Administrator's user name:  webmaster
User name of the owner of this new web:[root] <return>

Group of this new web:[nobody] <return>

    1.  ncsa
    2.  apache
    3.  apache-fp
    4.  apache-wpp
    5.  cern
    6.  netscape-communication
    7.  netscape-commerce
    8.  netscape-fasttrack
    9.  netscape-enterprise
What type of Server is this:  2

Installing root web into port 80...

installing server / on port 80

Will chown web to root as part of install.
Will chgrp web to nobody as part of install.

Starting install, port: 80, web: ""

Enter user's password: webmasterWebPasswd

Confirm password: webmasterWebPasswd

Creating root web
Recalculate links for root web
Chowning Content in service root web
Chmoding Extensions in service root web
Install completed.

    1.  LATIN1 (ISO 8859-1)
    2.  LATIN2 (ISO 8859-2)
    3.  EUCJP  (Japanese EUC)
    4.  EUCKR  (Korean EUC)
Which local character encoding does your system support: [1]  1

    1.  English
    2.  French
    3.  German
    4.  Italian
    5.  Japanese
    6.  Spanish
What should the default language be: [1] 1

Setting /usr/local/frontpage/version3.0/frontpage.cnf to:

defaultLanguage:en
localCharEncoding:latin1

Moving /usr/local/frontpage/version3.0/frontpage.cnf to
/usr/local/frontpage/version3.0/frontpage.cnf.orig

Creating and modifying new
/usr/local/frontpage/version3.0/frontpage.cnf...


Install new sub/per-user webs now (y/n) [Y]?  y

Using FrontPage Configuration File:  /usr/local/frontpage/we80.cnf

Getting DocumentRoot and UserDir.
Found Directive ResourceConfig, value conf/srm.conf.
```

```
        Getting DocumentRoot from /usr/local/apache/conf/srm.conf.
        Getting UserDir from /usr/local/apache/conf/srm.conf.

        DocumentRoot: /usr/local/apache/htdocs
        UserDir: public_html


        Enter the web name (CTRL-D if no more webs): aboutus
        FrontPage Administrator's user name:  webmaster

        Web aboutus is a subweb

        User name of the owner of this new web:  sally

        Group of this new web:[nobody] <return>

        installing server aboutus on port 80

        Will chown web to sally as part of install.
        Will chgrp web to nobody as part of install.

        Starting install, port: 80, web: "aboutus"

        Creating web aboutus
        Recalculate links for web aboutus
        Chowning Content in service aboutus
        Chmoding Extensions in service aboutus
        Install completed.

        Starting security, port: 80, web: "aboutus"

        Version: 3.0.2.1330
        Created: 21 Apr 1999 18:07:49 -0000
        Enter user's password: sallyWebPasswd

        Confirm password: sallyWebPasswd

Port 80: User "webmaster" and IP address "" added to administrators for web
"aboutus"

Enter the web name (CTRL-D if no more webs): ~cust1
FrontPage Administrator's user name:  cust1

Web ~cust1 is a per-user web

Group of this new web:[nobody] <return>

installing server ~cust1 on port 80

Will chown per-user web to cust1 as part of install.
Will chgrp per-user web to nobody as part of install.

Starting install, port: 80, web: "~cust1"

Creating web ~cust1
Recalculate links for web ~cust1
Chowning Content in service ~cust1
Chmoding Extensions in service ~cust1
Install completed.

Starting security, port: 80, web: "~cust1"

Version: 3.0.2.1330
Created: 21 Apr 1999 18:07:49 -0000
Enter user's password: cust1WebPasswd

Confirm password: cust1WebPasswd
```

A subweb is simply a part of the web heirarchy that is managed by the FrontPage server extensions. In this case the URL would be http://localhost/aboutus/

It is located on the filesystem under DocRoot.

In  this case the URL for the cust1 user would be http://localhost/~cust1/

It is located on the filesystem in the user's UserDir, typically the /home/cust1/public_html directory.

```
Port 80: User "cust1" and IP address "" added to administrators for web "~cust1"

Enter the web name (CTRL-D if no more webs): ^D
Installing Virtual Webs..

Do you want to install Virtual Webs (y/n) [Y]?  n

Installation completed!  Exiting...
#
```

## 3.7  Testing with the Microsoft FrontPage 98 Client

After you have installed the Microsoft FrontPage 98 client on your Windows-platform system, start the client.  From the Getting Started dialog window click on "More Webs" and enter the name of the web server.  In the example below the web server name is souhegan.zko.dec.com.
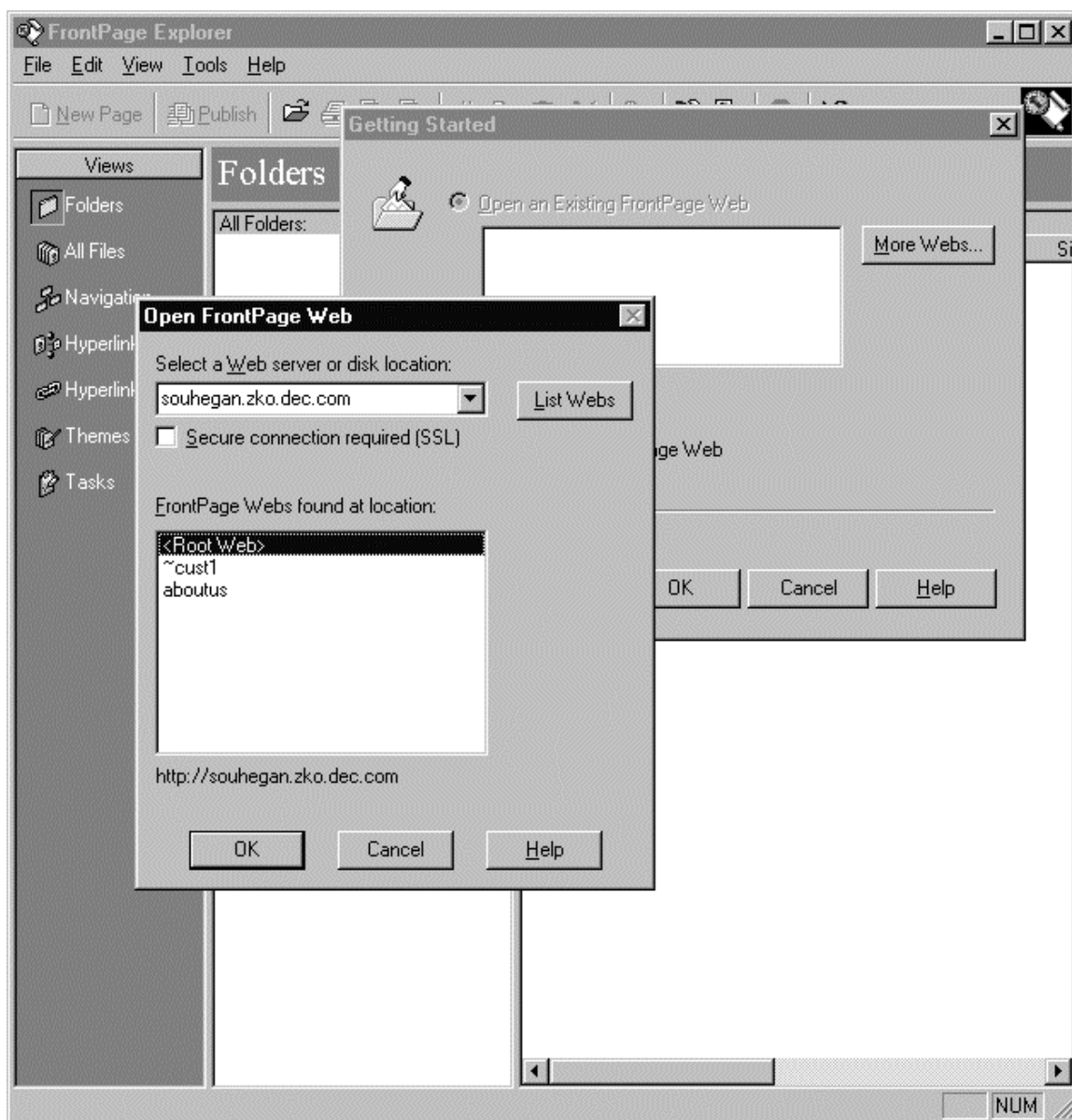


When you click on "List Webs" it will display a list of FrontPage webs.  In this example you can see that only the Document Root is available.  If you can open it, be prompted for a

username/password and insert a search engine then the FrontPage Server Extensions are working properly.

## 3.8  Obtaining the mod_frontpage Source

Microsoft has made available the source code for mod_frontpage. This increases the security of running the FrontPage Server Extensions as an Apache module.  Unfortunately the Microsoft patches are not compatible with current versions of the Apache web server.  Maxim Krasnaynsky has made patch kits available for current Apache versions on his FTP server.

If the `wget` tool is installed on your Linux system, use the following command to pull a copy of the mod_frontpage patch kit:

```
# cd /usr/src/
# wget -c ftp://missinglink.darkorb.net/pub/frontpage/fp-patch-apache_1.3.6
```

## 3.9  Rebuilding the Apache Web Server with mod_frontpage

The first step is to patch the pristine Apache sources with the mod_frontpage changes.

```
# patch -p0 < fp-patch-apache_1.3.6
patching file `apache_1.3.6/src/Configuration'
patching file `apache_1.3.6/src/Configuration.tmpl'
patching file `apache_1.3.6/src/include/httpd.h'
patching file `apache_1.3.6/src/main/http_request.c'
patching file `apache_1.3.6/src/main/util.c'
patching file `apache_1.3.6/src/modules/extra/mod_frontpage.c'
```

Now you must reconfigure the Apache sources to build with the new mod_frontpage code. Again, the status and info modules are optional.

```
# cd apache_1.3.6/
# ./configure --prefix=/usr/local/apache \
            --enable-module=status \
            --enable-module=info \
            --enable-module=frontpage
# make
```

Before installing the newly built web server, be sure to stop the running version.

```
# /usr/local/apache/bin/apachectl stop
```

Now you can install the newly built images and restart the web server.

```
# make install
# /usr/local/apache/bin/apachectl start
```

If you check /usr/local/apache/log/error_log, you will see the new module has been built into the Apache web server.

```
[Tue Apr 20 17:02:16 1999] [notice] Apache/1.3.6 (Unix) mod_frontpage/3.0.4.3
configured -- resuming normal operations
```

Another way to verify that mod_frontpage has been added is to have the web server display its build environment:

```
# /usr/local/apache/bin/httpd -l
Compiled-in modules:
  http_core.c
  mod_env.c
  mod_log_config.c
  mod_mime.c
  mod_negotiation.c
  mod_status.c
  mod_info.c
  mod_include.c
  mod_autoindex.c
  mod_dir.c
  mod_cgi.c
  mod_asis.c
  mod_imap.c
  mod_actions.c
  mod_userdir.c
  mod_alias.c
  mod_access.c
  mod_auth.c
  mod_setenvif.c
  mod_frontpage.c
#
```

## 3.10  Retesting with the Microsoft FrontPage 98 Client

Now that the Apache has been replaced, you should again verify that the Microsoft FrontPage 98 client can still access the server.  Perform the steps in Section 3.7 Testing with the Microsoft FrontPage 98 Client.

# 4  Managing an Apache Server with FrontPage Extensions

Once installed, the Apache web server should run unattended for long periods of time.  It is wise to keep an eye on the server to make sure everything runs smoothly.

## 4.1  Storage

The following sections identify storage considerations for users and for log files.

### 4.1.1  User Web Space

The amount of space needed to host a FrontPage-managed web site is much more than the usual. The reason is the FrontPage Server Extensions keep a number of per-user information files, executables, and "notes" about each of the html files.

The example `aboutus` sub-web created above with one 183-byte index.html file uses 338,084 bytes of disk space.  See the disk space information below:

```
# du --bytes --total /usr/local/apache/htdocs/aboutus/
8439   /usr/local/apache/htdocs/aboutus/_vti_pvt
1388   /usr/local/apache/htdocs/aboutus/_private
1273   /usr/local/apache/htdocs/aboutus/_vti_txt
1811   /usr/local/apache/htdocs/aboutus/_vti_cnf
80999  /usr/local/apache/htdocs/aboutus/_vti_bin/_vti_adm
81007  /usr/local/apache/htdocs/aboutus/_vti_bin/_vti_aut
322580 /usr/local/apache/htdocs/aboutus/_vti_bin
1024   /usr/local/apache/htdocs/aboutus/images
338084 /usr/local/apache/htdocs/aboutus
338084 total

# ls -lsR /usr/local/apache/htdocs/aboutus/
total 7
   1 drwxrwxr-x   2 sally     nobody        1024 Apr 21 14:14 _private
   1 drwxrwxr-x   4 sally     nobody        1024 Apr 21 14:14 _vti_bin
   1 drwxrwxr-x   2 sally     nobody        1024 Apr 21 14:38 _vti_cnf
   1 drwxrwxr-x   2 sally     nobody        1024 Apr 21 14:38 _vti_pvt
   1 drwxrwxr-x   2 sally     nobody        1024 Apr 21 14:14 _vti_txt
   1 drwxrwxr-x   2 sally     nobody        1024 Apr 21 14:14 images
   1 -rw-r--r--   1 sally     nobody         183 Apr 21 14:38 index.html

# /usr/local/apache/htdocs/aboutus/_private:
total 0

# /usr/local/apache/htdocs/aboutus/_vti_bin:
total 160
   1 drwxrwxr-x   2 sally     nobody        1024 Apr 21 14:14 _vti_adm
   1 drwxrwxr-x   2 sally     nobody        1024 Apr 21 14:14 _vti_aut
  79 -r-xr-xr-x   1 sally     nobody       79619 Apr 21 14:14 fpcount.exe
  79 -r-sr-sr-x   1 sally     nobody       79619 Apr 21 14:14 shtml.exe

# /usr/local/apache/htdocs/aboutus/_vti_bin/_vti_adm:
total 79
  79 -r-sr-sr-x   1 sally     nobody       79619 Apr 21 14:14 admin.exe

# /usr/local/apache/htdocs/aboutus/_vti_bin/_vti_aut:
total 79
  79 -r-sr-sr-x   1 sally     nobody       79619 Apr 21 14:14 author.exe

# /usr/local/apache/htdocs/aboutus/_vti_cnf:
total 1
   1 -rw-r--r--   1 sally     nobody         538 Apr 21 14:38 index.html
```

```
# /usr/local/apache/htdocs/aboutus/_vti_pvt:
total 14
   1 -rw-rw-r--   1 sally     nobody          114 Apr 21 14:14 access.cnf
   1 -rw-rw-r--   1 sally     nobody          324 Apr 21 14:38 deptodoc.btr
   6 -rw-rw-r--   1 sally     nobody         5616 Apr 21 14:38 doctodep.btr
   1 -rw-r--r--   1 sally     nobody           24 Apr 21 14:38 linkinfo.cnf
   1 -rw-rw-r--   1 sally     nobody          862 Apr 21 14:33 service.cnf
   1 -rw-rw-r--   1 sally     nobody           50 Apr 21 14:14 service.grp
   0 -rw-rw-r--   1 sally     nobody            0 Apr 21 14:38 service.lck
   1 -rw-rw-r--   1 sally     nobody           38 Apr 21 14:14 service.pwd
   1 -rw-rw-r--   1 sally     nobody          114 Apr 21 14:14 svcacl.cnf
   1 -rw-rw-r--   1 sally     nobody           24 Apr 21 14:14 writeto.cnf

# /usr/local/apache/htdocs/aboutus/_vti_txt:
total 0

# /usr/local/apache/htdocs/aboutus/images:
total 0
```

## 4.1.2  Web Log Storage

There are two areas that must be monitored to make sure the system doesn't run out of disk space. The first is the partition that holds the access and error log files.  The default location for the apache web server logs is /usr/local/apache/log/.  The rate of growth of a log file is highly variable depending on frequency of hits as well as the URL being requested.

While it is dependent on the web content's directory structure and naming conventions, a good rule of thumb is each hit logs about 150 bytes of data.  That means one megabyte of log for every 7000 hits.

### 4.1.2.1  Logrotate

The open source tool logrotate describes itself as designed to ease administration of systems that generate large numbers of log files. It allows automatic rotation, compression, removal, and mailing of log files. Each log file may be handled daily, weekly, monthly, or when it grows too large. If your Linux distribution does not include logrotate, you can obtain it from ftp://ftp.redhat.com/pub/linux/RedHat/redhat/code/logrotate/ or one of the many RedHat mirrors.

## 4.2  System Performance

An Apache web server, built as described in Section 3 enabled two special URLs: /server-status and /server-info.

### 4.2.1  Apache Server Status and Information Modules

The module mod_status displays information about the general health of the Apache web server including uptime, number of current requests, number of apache child processes, total number of accesses and bytes sent out.  By default the Apache configuration file (httpd.conf) has web access denied for the /server-status URL from everywhere.  Uncomment and edit the Allow line to include a list of systems or domains that are allowed access.

```
#
# Allow server status reports, with the URL of  http://servername/server-status
# Change the ".your_domain.com" to match your domain to enable.
#
<Location /server-status>
    SetHandler server-status
    Order deny,allow
    Deny from all
    Allow from .isp.com
</Location>
```

See the Apache documentation for more information at:
```
http://www.apache.org/docs/mod/mod_status.html
```

### 4.2.2  Apache Server Information Module

The module mod_info displays detailed information about the server configuration including all installed modules and directives in the configuration files.

By default the Apache configuration file (httpd.conf) has web access for the /server-info URL denied from everywhere.  Uncomment and change the Allow line to include a list of systems or domains that are allowed access.
```
#
# Allow remote server configuration reports, with the URL of
#  http://servername/server-info (requires that mod_info.c be loaded).
# Change the ".your_domain.com" to match your domain to enable.
#
<Location /server-info>
    SetHandler server-info
    Order deny,allow
    Deny from all
    Allow from .isp.com
</Location>
```

See the Apache documentation for more information at:
http://www.apache.org/docs/mod/mod_info.html

# 4.3  User Resources

The following sections explain how to manage user customer accounts and log files.

### 4.3.1  Customer Accounts

The important step not covered so far is how customers get access to their web space.  The simplest way is to create normal user accounts using the `adduser` tool.  We suggest that you also create a `public_html` directory where they can put their content.

In the Compaq ActiveAnswers "Virtual Web Hosting using the Apache Web Server on Linux", it is recommended to increase security that customers be only allowed FTP access but not shell access.  This is because FTP and telnet send the username and password in the clear over the network and is vulnerable to packet sniffing tools.  The recommended technique is to set the user's shell to be /bin/true.  Unfortunately the Microsoft FrontPage Server Extensions will not work properly if the user is prevented shell access in that manner.  The suggested alternative is to disable telnet and rlogin access to the system hosting the Microsoft FrontPage Server Extensions.

One way to disable telnet and rlogin access is to edit the file /etc/inetd.conf and comment out the following lines by putting a # in front of each.

```
# telnet      stream tcp   nowait root  /usr/sbin/tcpd      in.telnetd
# shell       stream tcp   nowait root  /usr/sbin/tcpd      in.rshd
# login       stream tcp   nowait root  /usr/sbin/tcpd      in.rlogind
```

If shell access is required by the ISP staff or customers, using Secure Shell (ssh) which encrypts all traffic is highly recommended.  Most importantly this includes the ISP staff who require shell access to the web server.  For more information about Secure Shell see the following web sites:

http://www.ssh.fi/sshprotocols2/

http://dir.yahoo.com/Computers_and_Internet/Communications_and_Networking/Software/Unix_Utilities/Ssh__Secure_Shell_/

As with all tools that include encryption, be aware of the laws in your area regarding importing and exporting of encryption technology.

### 4.3.2  Customer provided CGI scripts

Frequently customers will want to use server-side CGI scripts on their hosted web site. Because of the risk of a poorly written script taking up excessive CPU and memory resources, some hosting sites will not allow user-written scripts or require that they inspect them before they can be used. An ISP may provide a limited number of approved CGI scripts to be used for such things as page counters, guest books or simple information gathering scripts.

       If you decide to allow CGI scripts to be used by your customers, the document, *Apache suEXEC Support* (`http://www.apache.org/docs/suexec.html`), describes how to have customer written scripts run in the context of the customer's account.

### 4.3.3  Providing Simple Access to Log Files

The primary activities of interest to virtual web hosting customers is accessing their web site and error log files.  At a bare minimum, the perl script should be run once a month and the logs moved into the customer's directory on the web server.  One way to provide this securely to the customer is to create a `logs` directory parallel to their `public_html` directory and move the

log files into it.  The customer can then use FTP to pull down the log files for their own analysis.
Alternatively, the log files could be put into a protected directory in their `public_html`
directory.

For example, create a directory in the customer's area, `~cust1/public_html/logs`. In that
directory, create a file named `.htaccess` that contains the following lines:

```
AuthName "Access to Log files"
AuthType Basic
AuthUserFile /etc/passwd
Require cust1
```

And in the Apache httpd.conf file, change the section to include AuthConfig:

```
<Directory />
      Options FollowSymLinks Includes
      AllowOverride  AuthConfig
</Directory>
```

This requires cust1 to enter the username and password before gaining access to any files in
http://www.isp.com/~cust1/logs/.

Be aware that HTTP Basic Authentication does not use strong encryption of the username and
password and is vulnerable to packet sniffing tools.  This is the reason for implementing account
without shell access.

If you have a large number of virtual web domains, you may want to deploy a database backed
authentication scheme.  For more information on using a database to limit access, see
`http://www.apacheweek.com/features/userauth/`

### 4.3.3.1  Providing Sophisticated Access to Log Files

The next step up in functionality is to provide pre-generated graphical representations of the
access log information.  Two popular open source web log analysis tools are Webalizer and
Analog. Both generate similar reports. Which one to use is mostly personal preference.

Yahoo! maintains a comprehensive list of log analysis tools at:

```
http://dir.yahoo.com/Computers_and_Internet/Software/Internet/World_Wide_Web/Ser
vers/Log_Analysis_Tools/
```

Freshmeat.net is another good resource for locating log analysis tools specifically for Linux:

http://www.freshmeat.net/appindex/console/log-analyzers.html

### 4.3.3.2  Webalizer

Webalizer is a fast, free web server log file analysis program.  It produces highly detailed, easily
configurable usage reports in HTML format for viewing with a standard web browser.  It can
display access information sorted  by top URLs, source IP addresses of web browsers, URLs of
pages that refer to your web site, a chart of countries from which people are viewing the web site,
and versions of web browsers used.

See the web site http://www.mrunix.net/webalizer for more information and to download the
source.

### 4.3.3.3  Analog

Analog claims to be the most popular log file analyzer in the world and can also generate highly detailed and configurable usage reports in HTML format.  It is not quite as graphical as Webalizer, but is a solid tool.

See the web site http://www.statslab.cam.ac.uk/~sret1/analog/ for more information and to download the source.

# 5  Appendix A

This perl script will read an Apache access or error logfile as configured in the Section, *Updating Apache Web Server for IP-based Hosting* and generate separate log files for each virtual web site. The generated log files will be named access_log.www.first-customer.com and error_log.www.first-customer.com

```perl
#!/usr/bin/perl
#
# split-virt-logs -- Split Apache access_logs based on virtual web domains
#
# Usage:  split-virt-logs < access_log
#
# It generates one log file per virtual web domain in the form
# www.domain1.com-access_log in the current directory
#

use FileCache;              # keep more files open than the system permits

while (<>) {

    # Split off the first word as the domain name
    unless (defined ($domain = (split)[0])) {
      warn "Invalid line: $.\n";
      next;
    }

    $path = "$domain-access_log"; # build output log filename
    cacheout $path;               # let FileCache worry about open files

    s/^$domain //;          # remove domain name from $_

    print $path $_;

}
```

# 6 Further Reading

- Official web site for the Apache Web Server (http://www.apache.org)

  Download the Apache Web Server source kit from here.  Documentation for the web server is also available.

- ApacheWeek (http://www.apacheweek.com)

  The site has a wealth of information about virtual web hosting, user authorization, server configuration and extensive information about extending Apache with modules.

- Caldera Linux Distribution (http://www.calderasystems.com)

  The web site of the Caldera Linux distribution.

- RedHat Linux Distribution (http://www.redhat.com)

  The web site for the official RedHat Linux distribution.

- SuSE Linux Distribution (http://www.suse.com)

  The web site for the official SuSE Linux distribution.

- Slackware Linux Distribution (http://www.slackware.org)

  The web site for the official Slackware Linux distribution.

- Pacific HiTech Linux Distribution (http://www.pht.com)

  The web site for the official TurboLinux distribution.

- Debian Linux Distribution (http://www.debian.org)

   The web site of the official Debian distribution.

- Freshmeat.net (http://www.freshmeat.net)

  A great site for Open Source solutions.  Of particular interest is the pointer to the mod_frontpage patches for the Apache web server. (http://www.freshmeat.net/appindex/1998/06/18/898181363.html)