

FUJITSU Cloud Service S5

Configure Apache Web Server and PHP with CentOS Servers

This guide details the steps to setup Apache Web Server and install PHP using the YUM software package manager with CentOS Servers on the FUJITSU Cloud Service S5.

Introduction

The FUJITSU Cloud Service S5 is an open platform and in the interest of openness, this guide will form part of a series dedicated to using the FUJITSU Cloud Service S5 in an open source context. The steps necessary to configure Apache Web Server 2.2.3 with PHP 5.1.6-27 on a CentOS server in the FUJITSU Cloud Service S5 are covered here. Apache Web Server software is used to host in excess of 360 million web sites ^[1], representing some 65% ^[1] of web sites. PHP is a scripting language especially suited for Web development, accounting for some 77% ^[2] of sites where the scripting language is known. As of November 2006, more than 19 million ^[3] websites (domain names) use PHP.

[1] "January 2012 Web Server Survey". Netcraft, <http://news.netcraft.com/archives/category/web-server-survey/>. Retrieved 10-January-2012.

[2] "Historical trends in the usage of server-side programming languages for websites". W3Techs, http://w3techs.com/technologies/history_overview/programming_language. Retrieved 10-January-2012.

[3] "Usage Stats for April 2007". Netcraft, <http://www.php.net/usage.php>. Retrieved 10-January-2012.

CentOS (Linux), Apache Web Server and PHP are key parts of LAMP (Linux, Apache HTTP Server, MySQL, PHP / Perl / Python). Organisations are increasingly using LAMP to lower cost and to avoid platform lock-in. For more information refer to Apache HTTP Server Project (<http://httpd.apache.org/>) and PHP (<http://php.net/>).

The yum package supplied with CentOS is a software package manager to install, update, and remove packages on RPM-based systems. Yum will be used in this guide to install PHP.

Assumptions

- User Account, Certificate and connectivity to the FUJITSU Cloud Service S5.
- Familiarity with the FUJITSU Cloud Service S5 Portal basic configuration and administration tasks.
- Familiarity with the FUJITSU Cloud Service S5 Portal System Manager and Design Studio.
- Familiarity with Linux / CentOS configuration and administration tasks.
- At least one CentOS Economy Server on the FUJITSU Cloud Service S5 located in a DMZ zone.

Start & Configure Apache Web Server

By default CentOS servers in the FUJITSU Cloud Service S5 have the Apache Web Server version 2.2.3 installed. This guide will cover the default installed version.

1. Apache Web Server is installed and configured to listen on TCP port 80 (e.g. HTTP) by default. The Apache control script used to stop, start, restart the Web Server is located,

```
[root@localhost ~]# cd /usr/sbin/  
[root@localhost sbin]# ls -l apachectl  
-rwxr-xr-x 1 root root 3916 Mar 27 2010 apachectl  
[root@localhost sbin]#
```

2. Start Apache using the script,

```
[root@localhost sbin]# ./apachectl start  
[root@localhost sbin]#
```

3. Confirm that Apache has started and is listening to the specified TCP port,

```
[root@localhost sbin]# netstat -na | grep 80
tcp        0      0 :::80          :::*           LISTEN
```

4. If you navigate to your CentOS server's IP address using a web browser,
5. Configure Apache to start automatically when the CentOS server is rebooted using the command `chkconfig apache on` and then check the result

```
[root@VM-Q3R-S-0003 sbin]# chkconfig --list | grep httpd
httpd      0:off  1:off  2:on   3:on   4:on   5:on   6:off
[root@VM-Q3R-S-0003 sbin]#
```

Configure Yum Package Manager

This guide will use the yum package manager to install PHP. By default CentOS servers in the FUJITSU Cloud Service S5 have yum installed but several steps are necessary to allow DNS and HTTP traffic to pass from the VM to the Internet:

6. Ensure that the virtual system (v-sys) on the FUJITSU Cloud Service S5 has a Public IP Address:
 - a. Using **System Manager**, select the v-sys and press the **Reconfigure** button.
 - b. Left click on the **DMZ** title bar to display the virtual system connectivity.
 - c. Enable **Internet** connectivity.
 - d. Left click on the firewall icon.
 - e. Press **Add IP Address** button to assign a Public IP Address to the virtual system.
 - f. Press the **Next** button, check **I agree to Terms of Service** check-box and press the **Final Confirmation** button to complete the change.
 - g. When the change has completed, go back to the v-sys in **System Manager**, select the firewall. On the **Public IP Address** tab, click the **Enable** button.
7. Set the DNS on the firewall to enable DNS services to the Internet:
 - a. From the **System Details** window, click **DNS Settings**.
 - b. Check the **Standard DNS** radio button option and click **OK** to save the change.
8. Create NAT between the Global IP Address and the Private IP Address in the DMZ zone:
 - a. From the **System Details** window, press the **NAT Settings** button.
 - b. Specify NAT rules as follows,
 - i. Under the **DNAT** section, select any VM from the **Servers in the DMZ** drop down list. In this example the Public IP Address 137.172.209.81 is translated to the VM with the IP Address 192.168.8.12.
 - ii. Under the **SNAPT** section, select the **Public IP Address**. In this example the Public IP address is 137.172.209.81.
 - c. Click **OK** to make the change and click **OK** again to confirm the update.
9. Add firewall rules to allow DNS and HTTP traffic to pass.
 - a. Using **System Manager** select the v-sys, left click on the firewall icon and press the **FW Settings** button.
 - b. Select the network zone (e.g. **DMZ** etc.) containing the VM out of the options presented in the **FROM** drop-down list.
 - c. Select **Internet** out of the **TO** drop-down list.
 - d. Click the **Refined Search** button, and then press the **Add** button to create a new rule. Additional rules will be added for each zone:
 - i. DMZ to Internet: **Source** drop-down list choose **any**; **Service** drop-down list select **DNS**.
 - ii. DMZ to Internet: **Source** drop-down list select **any**; **Target/Service** text box type the text any; **Target Port** drop-down list select **http (80)**.
 - e. Press the **Confirm** button, answering **Yes** to confirm the change the firewall rules. Sample rules are next,

FROM	TO	ID	Source	Source Port	Target/Service	Target Port	Protocol	Action	Log
DMZ	Internet	45001	any	any	DNS	---	---	Accept	On
DMZ	Internet	45002	any	any	any	http(80)	TCP	Accept	On
---	---	50000	---	---	---	---	---	Drop	On

10. Setup the local resolver on each VM requiring PHP. Create a remote SSH connection and perform the following steps:
 - a. Using a file editor of choice (`vi` is used in this example), add the line `DNS1=<fcgp-dns-ip-address>` to the bottom of the `ifcfg-eth0` file, `/etc/sysconfig/network-scripts/ifcfg-eth0` as follows:

```
[root@VM-Q3R-S-0003 ~]# vi /etc/sysconfig/network-scripts/ifcfg-eth0
[root@VM-Q3R-S-0003 ~]# █
```

NOTE: 137.172.209.9 is the Primary DNS server on the FUJITSU Cloud Service S5.

```
DEVICE="eth0"
BOOTPROTO="dhcp"
DHCPV6C="yes"
IPV6INIT="yes"
IPV6_AUTOCONF="no"
NM_CONTROLLED="no"
ONBOOT="yes"
TYPE="Ethernet"
DEFROUTE="yes"
PEERDNS="yes"
PEERROUTES="yes"
IPV4_FAILURE_FATAL="yes"
IPV6_DEFROUTE="yes"
IPV6_FAILURE_FATAL="no"
NAME="System eth0"
UUID=26d2c7fa-7090-e181-ae1a-560bfc91ed06
DNS1=137.172.209.9 █
~
~
~
~
~
-- INSERT --
```

- b. Test that yum can access the remote repository using the following syntax,

```
[root@localhost ~]# yum list updates | more
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: mirror.optus.net
 * extras: mirror.optus.net
 * updates: mirror.optus.net
Updated Packages
Deployment_Guide-ja-JP.noarch                5.8-1.e15.centos                base
ImageMagick.i386                             6.2.8.0-15.e15_8                updates
ImageMagick.x86_64                           6.2.8.0-15.e15_8                updates
NetworkManager.i386                          1:0.7.0-13.e15                  base
NetworkManager.x86_64                       1:0.7.0-13.e15                  base
NetworkManager-glib.i386                    1:0.7.0-13.e15                  base
NetworkManager-glib.x86_64                  1:0.7.0-13.e15                  base
NetworkManager-gnome.x86_64                 1:0.7.0-13.e15                  base
PyXML.x86_64                                 0.8.4-6.e15                     base
SDL.x86_64                                   1.2.10-9.e15                    base
SysVinit.x86_64                              2.86-17.e15                     base
acl.x86_64                                   2.2.39-8.e15                    base
acpid.x86_64                                 1.0.4-12.e15                    base
alsa-utils.x86_64                            1.0.17-6.e15                    base
amtu.x86_64                                  1.0.6-2.e15                     base
apr.x86_64                                   1.2.7-11.e15_6.5                base
apr-util.x86_64                              1.2.7-11.e15_5.2                base
--More-- █
```

Install PHP Using Yum

Install PHP using yum software package manager:

11. Using the syntax `yum install <package-name>` install PHP,

```
[root@localhost sbin]# yum install php
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: mirror.optus.net
 * extras: mirror.optus.net
 * updates: mirror.optus.net
Setting up Install Process
Resolving Dependencies
--> Running transaction check
---> Package php.x86_64 0:5.1.6-34.el5_8 set to be updated
--> Processing Dependency: php-common = 5.1.6-34.el5_8 for package: php
--> Processing Dependency: php-cli = 5.1.6-34.el5_8 for package: php
--> Running transaction check
---> Package php-cli.x86_64 0:5.1.6-34.el5_8 set to be updated
---> Package php-common.x86_64 0:5.1.6-34.el5_8 set to be updated
```

12. Install additional packages,

```
[root@localhost sbin]# yum install php-mysql php-devel php-gd php-mcrypt php-pecl-memcache php-openssl php-snmp php-xmlrpc php-xml
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: mirror.optus.net
 * extras: mirror.optus.net
 * updates: mirror.optus.net
Setting up Install Process
No package php-mcrypt available.
Package php-common-5.1.6-34.el5_8.x86_64 already installed and latest version
Resolving Dependencies
--> Running transaction check
---> Package php-devel.x86_64 0:5.1.6-34.el5_8 set to be updated
--> Processing Dependency: autoconf for package: php-devel
--> Processing Dependency: automake for package: php-devel
---> Package php-gd.x86_64 0:5.1.6-34.el5_8 set to be updated
---> Package php-mysql.x86_64 0:5.1.6-34.el5_8 set to be updated
--> Processing Dependency: php-pdo for package: php-mysql
--> Processing Dependency: libmysqlclient.so.15(libmysqlclient_15) (64bit) for package: php-mysql
--> Processing Dependency: libmysqlclient.so.15() (64bit) for package: php-mysql
---> Package php-pecl-memcache.x86_64 0:2.2.3-1.el5_2 set to be updated
--> Processing Dependency: /usr/bin/pecl for package: php-pecl-memcache
---> Package php-snmp.x86_64 0:5.1.6-34.el5_8 set to be updated
```

13. Finally test PHP, next.

Test PHP

After installing PHP and configuring Apache finally test the operation:

14. Locate the Apache document root,

```
[root@localhost conf]# cat /etc/httpd/conf/httpd.conf | grep DocumentRoot
# DocumentRoot: The directory out of which you will serve your
DocumentRoot "/var/www/html"
# This should be changed to whatever you set DocumentRoot to.
# DocumentRoot /www/docs/dummy-host.example.com
[root@localhost conf]#
```

15. Using an editor of choice create a new file called **info.php** (vi editor will be used in this example),

