

Email-a-Friend Server Installation

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Table of Contents

1	Introduction	1
1.1	Related Documents	1
1.2	Acronyms Used in This Document	1
2	Overview	2
3	Prerequisites	3
4	OS and Database Installation	4
4.1	Solaris OS	4
4.2	Oracle 8.1.5.....	4
5	Compile and Install Software Packages	5
5.1	GNU compiler.....	5
5.2	Perl.....	5
5.3	Apache Web Server.....	6
5.4	Build Server.....	6
6	Configure Server	7
7	Perl Modules	8
8	Email-a-Friend Applications	9
9	Mail Server	9
10	Post-Installation	10
10.1	Reboot.....	10
11	Integration and Testing	10
12	Included Files	11

1 Introduction

The Email-a-Friend server processes the bluematter peer-to-peer requests using the Email-a-Friend functionality. This document describes the installation procedure for installing the Email-a-Friend server at Digital Island.

1.1 Related Documents

The following documents can be referenced for more information:

- DS2.0-003 *p2p Distribution Functional Specification Release 2.0*
- AR2.0-002 *bluematter release 2.0 Technical Specification*
- *Email-a-Friend Web Server Release Notes and Installation Instructions Release 1.0* (by Infotects, Inc.)

1.2 Acronyms Used in This Document

Acronym	Meaning
BMD	bluematter data—the extension for the Package Import file
BMR	bluematter reference
CC	Content Catalog
EAF	Email-a-Friend
MIME	Multipurpose Internet Mail Extension
p2p	peer-to-peer
SAC	secure authenticated channel
SPOP	secure proof of purchase
XML	Extensible Markup Language

2 Overview

Figure 1 gives an overview of the Email-a-Friend functionality.

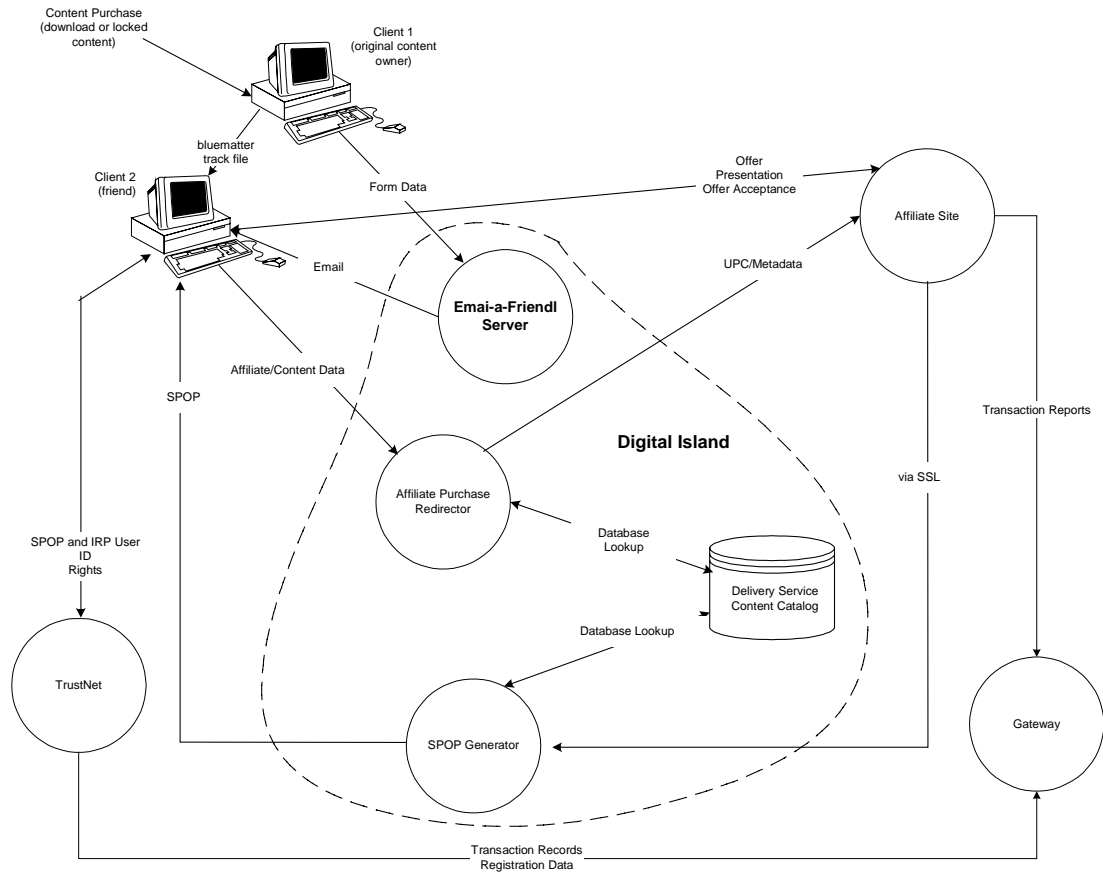


Figure 1. Email-a-Friend Data Flow Chart

For more details on the functionality of the Email-a-Friend server, see DS2.0-003 p2p Distribution Functional Specification Release 2.0.

There are two live EAF servers at Digital Island (Sun 8 and Sun 9) and one test EAF server (Sun 7). Sun 8 and Sun 9 correspond to <http://mail.bluematter.com>. Sun 9 corresponds to <http://testmail.bluematter.com>. The installation instructions contained in this document must be performed on all three machines.

3 Prerequisites

The following software products need to be installed on the server. All software is included in this release except those marked with an asterisk (*). These are the responsibility of the installing organization or Digital Island.

- Solaris 8*— it is likely that Solaris 7 could also be used, but all testing was with Solaris 8.
- Oracle 8.1.5*—previous versions of Oracle 8/8i should also work, but it is known that Oracle 8.1.6 will not work at this time. It is unknown whether Oracle 8.1.7 and above will work with this configuration. Only Oracle 8.1.5 was successfully tested.
- GNU C compiler—gcc-2.95.2 was used for development and is needed to compile and install Apache, Perl, and related software. The version used is included in the distribution, but it is expected that any recent version should work just as well.
- Perl 5.6.0—do not use the version of Perl that ships with Solaris. The install instruction will detail the steps needed to override this.
- Apache Server 1.3.14
- mod_perl 1.24—this is the Perl interpreter embedded in Apache that allows for efficient Apache/Perl integration.
- Perl modules—the following Perl modules are needed for this application:
 - MIME-Base64-2.11
 - ApacheDBI-0.87
 - DBD-Oracle-1.06
 - DBI-1.14
 - Email-Valid-0.12
 - libnet-1.0703
 - libwww-perl-5.48
 - libapreq-0.31
 - MailTools-1.15
 - MIME-Lite-2.104
 - XML-Parser-2.29-

Note: *The XML-Parser-2.30 does not yet work with Apache and mod_perl.*

All included packages should be unzipped to a temporary directory on the target machine. In our examples, we will assume this is `/tmp/EAF`.

The optimal configuration depends on the hardware used, but this document assumes one machine will run all software and services. The optimal configuration comes with separate drives (or at least separate file systems) for the following:

- OS and Apache—recommended 6+ GB hard drive
- Oracle SW—recommended 1.5+ GB
- Oracle DB—size depends on desired logging capabilities, but recommend as large as practical.

4 OS and Database Installation

It is recommended that the installation be performed in the order listed here.

4.1 Solaris OS

Install Solaris as described in the Solaris installation instructions. Note that file systems for Oracle are referred to in this document as `/u1` and `/u2`, but can be named according to any convention.

4.2 Oracle 8.1.5

Install Oracle by following the Oracle install instructions. It is recommended that at least two (2) different file systems/drives be used for the Oracle software and the actual Oracle database. In our examples, we will assume Oracle software is loaded at `/u1/oracle` and the database files are created under `/u2/oracle`.

Some recommendations during the Oracle install:

- Database name and SID—remember what you have called the database. It is needed for the Apache configuration.
- Boot configuration—Configure Oracle to start at boot time by placing the “dbora” file (example included) in `/etc/init.d`. Then run as root (if not done by Oracle install):

```
# ln -s /etc/init.d/dbora /etc/rc0.d/K10dbora
# ln -s /etc/init.d/dbora /etc/rc2.d/S99dbora
```
- Add needed users and permissions to the database—execute the contents of `eaf_user.sql` inside `sqlplus` or `svrmgrl` to add the user **eaf** to the database
- Add the required logging table to the database—execute the contents of `eaf_log.sql` inside `sqlplus` as user **eaf**

5 Compile and Install Software Packages

It is recommended that all the following software is built using a single login using a consistent base directory. For our examples, we will use the login "build" and the directory "~build/src" as the base directory. Also, we recommend using /bin/ksh as the login shell and we include an example profile to install in that user's home directory. You will need to change some values for your particular installation (e.g. ORACLE_HOME and ORACLE_USERID should match your Oracle installation).

5.1 GNU compiler

Install the gcc compiler using the included "gcc-2.95.2-sol8-sparc-local.gz" file. If you are not using Solaris 8, you need to download the correct binary version (not the source version) for the Solaris version from www.gnu.org.

Run the following in a temporary directory:

1. `cd /tmp/EAF`
2. `gunzip gcc-2.95.2-sol8-sparc-local.gz`
3. `pkgadd -d gcc-2.95.2-sol8-sparc-local`

This will install gcc and related utilities into /usr/local by default. It is recommended to keep this as is.

5.2 Perl

Compile and install the newest Perl (5.6.0). This will override the Perl version installed with Solaris. You should read the included Perl documents (README, INSTALL, etc. for more details or if you have problems).

1. `mkdir ~build/src/perl`
2. `cp /tmp/EAF/perl-5.6.0.tar.gz ~build/src/perl`
3. `cd ~build/src/perl`
4. `gunzip perl-5.6.0.tar.gz`
5. `tar xvf perl-5.6.0.tar`
6. `cd perl-5.6.0`
7. `sh Configure -de -Dcc='gcc' -B/usr/ccs/bin/`
8. `make`

9. make test
10. (as root) make install

Note: Most likely you will not be able to run **make install** as root without modifying root's **PATH** variable. In most cases, running **/usr/ccs/bin/make install** will be sufficient. If it is not, you will need to manually set the root **PATH** variable to match the **PATH** value for the build login:

- <build> echo \$PATH
- <root># PATH="<build's PATH>"
- <root># export PATH

This should only be necessary in isolated cases. Using the full pathname of make should be sufficient most of the time.

5.3 Apache Web Server

The Apache server will be built in two (2) parts—the Apache server and mod_perl—the embedded Perl interpreter.

5.4 Build Server

1. mkdir ~build/src/apache
2. cd ~build/src/apache
3. cp /tmp/EAF/apache-1.3.14.tar.gz .
4. cp /tmp/EAF/mod_perl-1.24_01.tar.gz .
5. gunzip apache-1.3.14.tar.gz
6. gunzip mod_perl-1.24_01.tar.gz
7. tar xvf apache-1.3.14.tar
8. tar xvf mod_perl-1.24_01.tar
9. cd mod_perl-1.24_01
10. perl Makefile.PL APACHE_SRC=./apache_1.3.14/src \
DO_HTTPD=1 USE_APACI=1 \
EVERYTHING=1
11. make

12. make test
13. (as root) make install
14. cd ../apache-1.3.14
15. sh -x ./configure

```
prefix=/usr/local/apache \  
activate-module=src/modules/perl/libperl.a
```
16. make
17. make test
18. make install

Apache is now built with mod_perl and installed in /usr/local/apache directory tree.

6 Configure Server

Note: These instructions use /usr/local as the working directory, when in actuality the working directory at Digital Island is /opt/customer/local. These instructions can be used if the command

```
ln -s /opt/customer/local /usr/local
```

is used to route all subsequent commands.

1. Log in as root
2. Configure the new Apache to be started correctly at boot time. Edit /etc/init.d/apache to use the correct paths for all Apache software. Example:

```
APACHE_HOME=/usr/local/apache  
CONF_FILE=/usr/local/apache/conf/httpd.conf  
PIDFILE=/usr/local/apache/logs/httpd.pid
```

3. Copy the included configuration files into Apache's configuration directory and modify to match your environment:

```
cd /usr/local/apache/conf  
mv httpd.conf httpd.conf.orig  
cp /tmp/EAF/httpd.EAF.conf httpd.conf  
cp /tmp/EAF/dbistartup.pl .
```

Edit httpd.conf to match your environment:

- *ServerName*—this should match your server's host name
- *PerlSetEnv ORACLE_HOME*—make sure this value matches where you installed Oracle

StartServers and *MaxSpareServers* can be changed depending on site needs. *StartServers* is the initial number of child servers that are started and should probably reflect the maximum number of

concurrent requests you expect. Apache dynamically adjusts to incoming loads, but too much starting and stopping of processes will cause processing delays. See the Apache documentation for more details about these and other parameters.

Note: For each Apache child process (`httpd`) that is running, a database connection will be created. If this exceeds Oracle's configured maximum, you will get errors in the Apache error log indicating this. As a general rule, we recommend configuring Oracle's "processes" value in the `initxxx.ora` Oracle init file to be at least as large as the number of Apache processes with some extra for additional processes. For example, when Apache is configured with 30 serving children, a good value is 40-50 for the "processes" value.

7 Perl Modules

The following Perl modules are required by the Email-a-Friend application and are included in the distribution:

- MIME-Base64-2.11
- ApacheDBI-0.87
- DBD-Oracle-1.06
- DBI-1.14
- Email-Valid-0.12
- libnet-1.0703
- libwww-perl-5.48
- MailTools-1.15
- MIME-Lite-2.104
- XML-Parser-2.29
- libapreq-0.31

For each of these modules, build as follows:

1. `cd ~build/src/perl`
2. `cp /tmp/EAF/<pkg>.tar.gz .`
3. `tar xvf <pkg>.tar`
4. `cd <pkg>`

5. perl Makefile.PL
6. make
7. make test
8. (as root) /usr/ccs/bin/make install

Note: The DBI-1.14 and MailTools-1.15 packages should be built first because other packages depend on them being there.

8 Email-a-Friend Applications

The core functionality for this application is in the P2P.pm for the 2.0 functionality and EAF.pm for the 1.0 functionality file. Here is how to install it (as root):

1. mkdir /usr/local/apache/Apache
2. cd /usr/local/apache/Apache
3. cp /tmp/EAF/P2P.pm .
4. cp /tmp/EAF/EAF.pm .
5. Edit EAF.pm and change the configuration values to match your environment:

```
$Apache::EAF::DBHOST = '<Oracle machine's hostname>';
$Apache::EAF::DBSID = '<Oracle SID>';
$Apache::EAF::DBUSER = 'eaf';
$Apache::EAF::DBPASSWD = 'eaf';
$Apache::EAF::SMTP_SERVER = 'local host';
$Apache::EAF::SMTP_TIMEOUT = 60;           # in seconds

# Note that you cannot open a logfile in the apache/logs dir due
# to root perms. Use an application specific log dir (NOT /tmp!).
$Apache::P2P::LOGFILE = '<log file for unsuccessful attempts>';
```

6. chmod 711 P2P.pm.
7. chmod 711 EAF.pm.

9 Mail Server

The qmail server has been replaced with the Sendmail server for the 2.0 release. Digital Island is responsible for installing Sendmail on Sun 8, Sun 9, and Sun 7.

10 Post-Installation

10.1 Reboot

Now you should reboot the machine and verify that all processes start as desired:

- Oracle— Run `ps -ef | grep ora` and verify that the “tnslsnr” process and multiple “ora_XXX_eaf” processes are running
- Apache— Run `ps -ef | grep httpd` and verify that multiple copies of the “httpd” process are running

11 Integration and Testing

For final integration:

1. Any background files (e.g. background.gif that is used in the HTML response) should be placed in the `/usr/local/apache/perl-bin` directory. If you choose to use a different directory, you should also change the EAF.pm module or the `/usr/local/apache/conf/httpd.conf` file to reflect this change.
2. You will need to switch the application that calls the current server to instead use this server. The parameters used in the HTTP POST should still be the same. Make sure the URL used is in this format:

<http://your.server.name/perl-bin/eaf.pm>

The “eaf.pm” can actually be named anything ending in “.pm” or “.pl”—this is a virtual file which signals Apache to use the EAF.pm module as the handler. See the `httpd.conf` file for how this is accomplished. All other files in this directory will be retrieved as is (e.g. background.gif).

You can test that the Email-a-Friend application is running correctly in two ways:

1. Running test requests from the bluematter skin after changing as above.
2. Or, by running the included test: `perl /tmp/EAF/EAFhttpstest.pl`. If you wish to use this test, you must install additional Perl modules to be used by this test program:
 - URI-1.09
 - HTML-Parser-3.13
 - HTML-Tagset-3.03
 - Digest-MD5-2.12

Build these Perl modules the same as in the Perl Module section. To run the test, copy the /tmp/EAF/EAFhttpstest.pl to a temporary directory, and change the request to use the new Web server and a test email account. This will send email, so be careful! Then run:

```
perl ./EAFhttpstest.pl
```

This will return an “OK” or “FAIL” text message and will also give the response time.

Note: Due to the way persistent database connections were implemented, the first time each Apache process attempts to connect to Oracle, it will incur an initial setup cost. This has the effect of making the first request served by each httpd a bit slower than subsequent attempts. After that, request response times will be much quicker.

12 Included Files

This release is distributed as a tar file containing multiple files and compressed tar files. It is available via download from Infotects—please contact them for details.

The output of the ‘sum’ command on this tar file:

```
$ sum EAF-1.00.tar
15898 56245 EAF-1.00.tar
```

The output of the ‘ls’ command:

```
$ ls -al EAF-1.00.tar
-rw-r--r--  1 build  other  28797440 Nov  7 13:02 EAF-1.00.tar
```

Here is the listing of files included in this release:

```
$ tar tvf EAF-1.00.tar
drwxr-xr-x 1002/1      0 Nov  7 12:56 2000 EAF/
-rwxr--r-- 1002/1     795 Nov  7 12:31 2000 EAF/dbora
-rwxr--r-- 1002/1     599 Nov  7 13:01 2000 EAF/svscan
-rwxr--r-- 1002/1    1312 Nov  7 12:31 2000 EAF/profile.build
-rw-r--r-- 1002/1  1824568 Nov  7 12:25 2000 EAF/apache_1.3.14.tar.gz
-rw-r--r-- 1002/1  151650 Nov  7 12:27 2000 EAF/DBD-Oracle-1.06.tar.gz
-rw-r--r-- 1002/1  178901 Nov  7 12:27 2000 EAF/DBI-1.14.tar.gz
-rw-r--r-- 1002/1   91844 Nov  7 12:27 2000 EAF/Digest-MD5-2.12.tar.gz
-rw-r--r-- 1002/1   7829 Nov  7 12:27 2000 EAF/Email-Valid-0.12.tar.gz
-rw-r--r-- 1002/1   59666 Nov  7 12:27 2000 EAF/HTML-Parser-3.13.tar.gz
-rw-r--r-- 1002/1   6668 Nov  7 12:27 2000 EAF/HTML-Tagset-3.03.tar.gz
-rw-r--r-- 1002/1   25097 Nov  7 12:27 2000 EAF/libapreq-0.31.tar.gz
-rw-r--r-- 1002/1   65011 Nov  7 12:27 2000 EAF/libnet-1.0703.tar.gz
-rw-r--r-- 1002/1  150515 Nov  7 12:27 2000 EAF/libwww-perl-5.48.tar.gz
-rw-r--r-- 1002/1   39761 Nov  7 12:27 2000 EAF/MailTools-1.15.tar.gz
-rw-r--r-- 1002/1   10716 Nov  7 12:27 2000 EAF/MIME-Base64-2.11.tar.gz
-rw-r--r-- 1002/1   86338 Nov  7 12:27 2000 EAF/MIME-Lite-2.104.tar.gz
-rw-r--r-- 1002/1  362328 Nov  7 12:25 2000 EAF/mod_perl-1.24_01.tar.gz
-rw-r--r-- 1002/1  5491330 Nov  7 12:27 2000 EAF/perl-5.6.0.tar.gz
-rw-r--r-- 1002/1   80336 Nov  7 12:27 2000 EAF/URI-1.09.tar.gz
-rw-r--r-- 1002/1  295423 Nov  7 12:27 2000 EAF/XML-Parser-2.29.tar.gz
-rw-r--r-- 1002/1  19382718 Nov  7 12:23 2000 EAF/gcc-2.95.2-sol8-sparc-
    local.gz
-rw-r--r-- 1002/1   25335 Nov  7 12:27 2000 EAF/ApacheDBI-0_87_tar.gz
-rw-r--r-- 1002/1     409 Nov  7 12:54 2000 EAF/eaf_log.sql
```

```
-rw-r--r-- 1002/1      98 Nov  7 12:54 2000 EAF/eaf_user.sql
-rw-r--r-- 1002/1    1314 Nov  7 12:56 2000 EAF/EAFhttpptest.pl
-rwxr-xr-x 1002/1    9602 Nov  7 13:00 2000 EAF/EAF.pm
-rw-r--r-- 1002/1   33064 Nov  7 12:56 2000 EAF/httpd.EAF.conf
-rwxr-xr-x 1002/1    1721 Nov  7 12:56 2000 EAF/dbistartup.pl
```