

# Compile Open Source

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## OVERVIEW

This document records the details of how to compile, install, and patch the open source packages deployed in the VDOPS/Suse environment.

I originally wrote this document when our environment ran under Solaris 2.6 ... these packages didn't ship with Solaris. Since then, we've migrated to SuSE Linux, and most of these packages are bundled with the OS, so this document isn't as useful now. Still, when I want the latest and greatest version of something, this is where I go to record how I compile it.

In general, code can be compiled and installed using the following steps:

Acquire the source code, place it as follows: /home/username/whatever.tar.gz. Notice that most open source sites have a web site [www.something.xyz](http://www.something.xyz) as well as an ftp site, [ftp.something.xyz](ftp://ftp.something.xyz). As a command-line geek, I generally acquire open source programs directly from the ftp site.

```
cd /opt/vdops/src
tar xvfz /home/username/whatever.tar.gz
cd whatever
./configure
make
make install
```

Occasionally, a product may require customization before being compiled. This document identifies those twiddles. In addition, the order in which these packages are presented in this document is the order to be used if you are building the compile environment (df-compile).

You will need to fiddle with your LD\_LIBRARY\_PATH variable; I prefer to do this by adding "/opt/vdops/lib" somewhere in /etc/ld.so.conf or similar. This tells the compiler to check the "/opt/vdops" tree for libraries. [Many sites employ "/opt/local" instead of "/opt/vdops".] Also, make sure that "/opt/vdops/bin" occurs early in your path statement, for the same reason.

## OUTLINE

### Tips

Read the README and INSTALL files first. Look for caveats regarding Linux in general and your flavor of Linux in particular.

If I modify a product's {filename}, then I save the original as {filename}.ori first.

Packages can generally be uninstalled by typing "make uninstall".

I keep the original \*.tar.gz files in /opt/vdops/archive.

## Map

This table illustrates the dependencies amongst the packages described here. In general, trees need to be installed from the bottom-up. If nothing appears below a package, then that package does not depend on any other (open source) package.

### Supporting Libraries

| db | cyrus-sasl | gd       | gdbm | gmp | gettext | glib     | Gtk + | imap | libpng | libmcrypt | libpcap | pari | mhash | openldap | openssl | tcp_wrappers | zlib |
|----|------------|----------|------|-----|---------|----------|-------|------|--------|-----------|---------|------|-------|----------|---------|--------------|------|
|    |            | freetype |      | sed |         | freetype | glib  |      | zlib   |           |         |      |       | db       | bc      |              |      |
|    |            | jpeg     |      |     |         |          |       |      |        |           |         |      |       |          |         |              |      |
|    |            | libpng   |      |     |         |          |       |      |        |           |         |      |       |          |         |              |      |
|    |            | zlib     |      |     |         |          |       |      |        |           |         |      |       |          |         |              |      |

### Scripting Languages

| PERL | PHP       |
|------|-----------|
| db   | apache    |
| gdbm | db        |
| CPAN | gettext   |
|      | gdbm      |
|      | imap      |
|      | libpng    |
|      | openldap  |
|      | libmcrypt |
|      | mhash     |
|      | openssl   |

|  |      |
|--|------|
|  | zlib |
|--|------|

*PERL Scripts*

| <b>PatchReport</b> | <b>NodeWatch</b> | <b>dhcp-status</b> | <b>MRTG</b> | <b>razor-agents</b> | <b>SpamAssassin</b> | <b>spamd</b> | <b>swatch</b> | <b>x.radius</b> |
|--------------------|------------------|--------------------|-------------|---------------------|---------------------|--------------|---------------|-----------------|
| libwww             | Period           | Time-modules       | gd          | Digest-Nilsimsa     | HTML::Parser        | Net-DNS      | Time-Date     | Expect          |
| HTML-Parser        | IPC-Shareable    |                    | net-snmp    | Digest::SHA1        | HTML::TagSet        | Net-Ping     | File-Tail     | IO-Stty         |
| HTML-Tagset        |                  |                    | rrdtool     | URI::Escape         | razor-agents        | razor-agents | Date-Calc     | IO-Tty          |
| Bit-Vector         |                  |                    |             |                     |                     |              | Bit-Vector    |                 |
| MD5                |                  |                    |             |                     |                     |              |               |                 |
| MIME-64            |                  |                    |             |                     |                     |              |               |                 |
| URI                |                  |                    |             |                     |                     |              |               |                 |
|                    |                  |                    |             |                     |                     |              |               |                 |
|                    |                  |                    |             |                     |                     |              |               |                 |

|                      |                     |                   |
|----------------------|---------------------|-------------------|
| Class-Loader         | Crypt-RC4           | Net-SSH           |
| Compress-Zlib        | Crypt-RSA           | Net-SSH-Perl      |
| Convert-ASCII-Armour | Crypt-Random        | Net-SSLeay.pm     |
| Convert-ASN1         | Crypt-TripleDES     | Net-Telnet-Cisco  |
| Convert-PEM          | Data-Buffer         | Net-Telnet        |
| Crypt-Blowfish       | Devel-CoreStack     | Sort-Versions     |
| Crypt-Blowfish_PP    | Digest-BubbleBabble | String-CRC32      |
| Crypt-CBC            | Digest-HMAC         | Test-Simple       |
| Crypt-DES_EDE3       | Digest-MD2          | Test-Harness      |
| Crypt-DES            | Digest-MD5          | Term-Shell        |
| Crypt-DH             | Digest-SHA1         | TermReadKey       |
| Crypt-DSA            | IO-Socket-SSL       | Tie-EncryptedHash |
| Crypt-Primes         | Math-GMP            |                   |

One of these modules (I forget which) needs sed, and Math-Pari relies on pari.

### *Infrastructure Services*

|               |             |             |                 |                 |              |                   |              |                 |
|---------------|-------------|-------------|-----------------|-----------------|--------------|-------------------|--------------|-----------------|
| <b>apache</b> | <b>bind</b> | <b>dhcp</b> | <b>kerberos</b> | <b>openldap</b> | <b>qpage</b> | <b>freeradius</b> | <b>samba</b> | <b>sendmail</b> |
| php           |             |             |                 | cyrus-sasl      | tcp_wrappers | openldap          |              | db              |
|               |             |             |                 | openssl         |              |                   |              | openssl         |

### *E-Mail Applications*

|             |             |            |            |
|-------------|-------------|------------|------------|
| <b>imap</b> | <b>pine</b> | <b>pop</b> | <b>imp</b> |
| openldap    | openldap    | poppasswd  | openldap   |

|         |         |  |         |
|---------|---------|--|---------|
| openssl | openssl |  | openssl |
|         |         |  | imap    |
|         |         |  | php     |
|         |         |  | horde   |
|         |         |  | turba   |
|         |         |  |         |
|         |         |  |         |

*Security Services*

|                |                |               |
|----------------|----------------|---------------|
| <b>openssh</b> | <b>rpcbind</b> | <b>xinetd</b> |
| openssl        | tcp_wrappers   |               |
| tcp_wrappers   |                |               |
| zlib           |                |               |

*Utilities*

|                 |             |             |           |                 |             |             |
|-----------------|-------------|-------------|-----------|-----------------|-------------|-------------|
| <b>ethereal</b> | <b>lslk</b> | <b>lsof</b> | <b>nc</b> | <b>net-snmp</b> | <b>nmap</b> | <b>ntop</b> |
| glib            |             |             |           | openssl         |             | gdbm        |
| Gtk+            |             |             |           |                 |             | libpcap     |



## FOUNDATION CODE

These packages provide support for the stuff we actually use – end-user applications and system daemons.

### Supporting Libraries & Tools

These packages contain libraries or tools which other packages require.

#### POSTGRESQL 8.3.7

Available from <http://www.postgresql.org>.

```
./configure --prefix=/opt/vdops --with-openssl --with-pam
gmake
gmake install
```

[Create a user to run the postgres db manager]

```
useradd -u 51 -g vdops -d /export/home/postgres -c "PostGRES User" postgres
chown postgres:vdops /export/home/postgres
mkdir /home/postgress/data
chown postgres /home/postgres/data
sudo su - postgres
initdb -D /home/postgres/data -W
postmaster -D /home/postgres/data
createdb test
psql test
```

#### pgadmin3-1.02

Available from <http://www.pgadmin3.org>

```
cd /opt/vdops/pgadmin3-1.02
./configure --enable-static --enable-debug --prefix=/opt/vdops --with-wx=/opt/vdops
make
make install
```

#### RRDTOOL-1.4.2

Available from <http://www.rrdtool.org>.

```
cd /opt/vdops/src/rrd_tool-1.4.2
./configure --prefix=/opt/vdops --enable-perl-site-install
make
make install
```

Sometimes, I need to perform the following prior to 'configure':

```
set PKG_CONFIG_PATH=/usr/lib64/pkgconfig:/usr/lib/pkgconfig
export PKG_CONFIG_PATH
```

WXWINDOWS-PGADMIN3-20031010-7

Available from <http://www.pgadmin.org/pgadmin3/download.php#source>

```
cd /opt/vdops/src/wxWindows
./configure --with-gtk --enable-gtk2 --enable-unicode --disable-shared --enable-debug
prefix=/opt/vdops
make
make install
cd contrib/src/stc
make
make install
cd ../xrc
make
make install
```

## PERL

PERL 5.10.1

Available from <http://www.cpan.org>

```
cd /opt/vdops/src/perl-5.10.1
rm -f config.sh Policy.sh
./Configure -de -Dprefix=/opt/vdops -Dscriptdir=/opt/vdops/bin -Dsitescript=/opt/vdops/bin -
Dusetthreads
```

Or, on some 64 bit systems:

```
./Configure -de -Dprefix=/opt/vdops -Dscriptdir=/opt/vdops/bin -Dusetthreads -
Dlibpth="/usr/local/lib64 /lib64 /usr/lib64"

make
make test
make install
cd /usr/include
/opt/vdops/bin/h2ph * sys/*
```

## INFRASTRUCTURE SERVICES

### Alpha Paging

QPAGE-3.3

Available from [www.qpage.org](http://www.qpage.org). This compilation procedure relies on tcp\_wrapper support (/opt/vdops/lib/libwrap.a and /opt/vdops/include/tcpd.h). I modded config.input with the following lines.

```
QPAGE_CONFIG="/opt/vdops/etc/qpage/qpage.cf"
```

```
SNPP_SERVER_FILE="/opt/vdops/etc/qpage/qpage.servers"  
DAEMON_USER="uucp"  
SENDMAIL_PATH="/usr/sbin/sendmail"
```

See config.input.ori for the original.

I also modify srvsnpp.c as follows:

```
Original:    qpage_log(LOG_DEBUG, "processing the page queue");  
Mod:        /*      qpage_log(LOG_DEBUG, "processing the page queue"); */
```

```
cd /opt/vdops/src/qpage-3.3  
./configure --prefix=/opt/vdops  
make  
make install
```

## Authentication

### WPA\_SUPPLICANT 0.5.7

Available from [http://hostap.epitest.fi/wpa\\_supplicant/](http://hostap.epitest.fi/wpa_supplicant/)

Edit Makefile, replacing “/usr/local/sbin” with “/opt/vdops/sbin” in two places

```
mkdir /opt/vdops/etc/wireless  
cd /opt/vdops/src/wpa_supplicant-0.5.7  
cp defconfig .config  
make  
make eapol_test  
make install  
cp wpa_supplicant.conf /opt/vdops/etc/wireless
```

As root: mkdir /var/run/wpa\_supplicant

Ignore the following error:

```
cp: cannot stat `dynamic_eap_methods': No such file or directory  
make: *** [install] Error 1
```

Copy wpa\_supplicant.conf to /opt/vdops/etc/wireless

## Mail

### ALPINE 2.0.0

Available from <http://www.washington.edu/alpine/>

```
cd /opt/vdops/src/alpine-2.0.0  
./configure --prefix=/opt/vdops  
make  
make install
```

## SENDMAIL 8.12.9

Available from [ftp.sendmail.org/ucb/sendmail](http://ftp.sendmail.org/ucb/sendmail)

The Berkeley DB library must be installed before sendmail will compile.

See `/opt/vdops/src/sendmail-8.12.9/devtools/Site/site.config.m4` for my particular choices. You want to create this file before compiling sendmail. Read `../devtools/README` for instructions on creating this file.

Also, we move the smrsh config dir from `/usr/adm/sm.bin` to `/opt/vdops/etc/smrsh` by modding the smrsh source.

In `../smrsh/smrsh.c`, make the following change:

```
Original:      # define CMDDIR          "/usr/adm/sm.bin"
Mod:           # define CMDDIR          "/opt/vdops/etc/smrsh"
```

Here is a copy of `site.config.m4`:

```
#      @(#)FHCRC Site-specific build file  v2.1          9-23-2001

# Use gcc instead of Sun's cc
define(`confCC', `gcc')dnl

# Move sendmail.cf to /opt/vdops/etc/sendmail
APPENDDEF(`confENVDEF', `-'
D_PATH_SENDMAILCF="/opt/vdops/etc/sendmail/sendmail.cf"')dnl

# Include Berkeley db support
APPENDDEF(`confINCDIRS', ` -I/opt/vdops/BerkeleyDB.3.2/include')dnl
APPENDDEF(`confLIBDIRS', ` -L/opt/vdops/BerkeleyDB.3.2/lib')dnl
APPENDDEF(`confLIBS', ` -ldb')dnl

# Include NIS+ support for external database maps
# Don't bother with NIS or dbm support
define(`confMAPDEF', ` -DNISPLUS')dnl

# Install man pages in /opt/vdops
define(`confNROFF', ` /usr/bin/nroff -h')dnl
define(`confMANROOT', ` /opt/vdops/man/')dnl
define(`confMAN1', `man1')dnl
define(`confMAN5', `man5')dnl
define(`confMAN8', `man8')dnl
define(`confMANDOC', `')dnl
define(`confMANOWN', `root')dnl
define(`confMANGRP', `cnsadmin')dnl

# Look for binaries in /opt/vdops
define(`confEBINDIR', ` /opt/vdops/sbin')dnl
```

```

define(`confMBINDIR', `/opt/vdops/sbin')dnl
define(`confSBINDIR', `/opt/vdops/sbin')dnl
define(`confUBINDIR', `/opt/vdops/bin')dnl

# Look for various files in /opt/vdops/etc/sendmail
define(`confHFDIR', `/opt/vdops/etc/sendmail')dnl
define(`confSTDIR', `/opt/vdops/etc/sendmail')dnl

# Make root and cnsadmin owner and group respectively of man pages
define(`confMANOWN', `root')dnl
define(`confMANGRP', `cnsadmin')dnl

```

Once you have site.config.m4 in place, you can compile sendmail.

```

cd /opt/vdops/src/sendmail-8.12.9
sh Build -c
sh Build install
cd editmap
sh Build install
cd ../makemap
sh Build install
cd ../smrsh
sh Build install

```

(Notice that “sh Build clean” wipes the binaries. Type “sh Build -c” if you want to wipe the binaries and re-read the ../devtools/Site/site.config.m4 file – this is not automatically done, even after a “../src/Build clean”).

SPAMASSASSIN-2.60

[www.spamassassin.org](http://www.spamassassin.org)

SPAMASS-MILTER-0.20

<http://savannah.nongnu.org/projects/spamass-milt> (see also <http://www.milter.org>)

## NetFlow

FLOW-TOOLS-0.6.8

Available from <http://code.google.com/p/flow-tools/>

Old home page <http://www.splintered.net/sw/flow-tools/>

```

cd /opt/vdops/src/flow-tools-0.6.8.4.3

```

```

patch -p1 < ../wvnetflow-1.05/required-modules/patch.flow-
tools.nosequenceerrs
patching file src/flow-capture.c

```

```
patching file src/flow-fanout.c
patching file src/flow-receive.c
[netops@jane flow-tools-.68]$

./configure --prefix=/opt/vdops
make
make install
cp docs/flow-receive.1 /opt/vdops/man/man1

cd /opt/vdops/src/flow-tools-0.6.8.4.3/contrib
tar xvfz Cflow-1.053.tar.gz
cd Cflow-1.053
perl Makefile.PL CCFLAGS='-DOSU' LIBS='-lft'
perl Makefile.PL
make
make install
```

## WEBVIEW NETFLOW REPORTER

Available from <http://wvnetflow.sourceforge.net/>

Install X86\_64 libraries

```
yum install libX11-devel.x86_64
yum install fontconfig-devel.x86_64
yum install freetype-devel.x86_64
```

Add user

```
useradd -c "Webview Netflow Reporter" -m -g 101 webview
```

Set-up data directory

```
ln -s /home/webview /var/log/webview
cd /home/webview
mkdir flows flows/tmp flows/data flows/capture
chown -R webview:vdops /home/webview
```

## Radius

### FREERADIUS-2.0.0

Available from [www.freeradius.org](http://www.freeradius.org)

```
cd /opt/vdops/src/freeradius-2.0.0
./configure --prefix=/opt/vdops
make
make install
ldconfig (as root)
```

# END-USER APPLICATIONS

## E-mail Clients

PINE 4.64

Available from <ftp.cac.washington.edu/pine/pine4.64.tar.gz>

Modify ../pine/osdep/os-lnx.h as follows:

```
Original:      #define SYSTEM_PINERC           "/usr/vdops/lib/pine.conf"
Original:      #define SYSTEM_PINERC_FIXED  "/usr/vdops/lib/pine.conf.fixed"
Mod:           #define SYSTEM_PINERC           "/opt/vdops/etc/pine/pine.conf"
Mod:           #define SYSTEM_PINERC_FIXED  "/opt/vdops/etc/pine/pine.conf.fixed"
```

## CentOs

```
cd /opt/vdops/src/pine4.64
ln -s /usr/lib/evolution-openldap ldap
./build SSLDIR=/usr lrh
cp bin/pico /opt/vdops/bin
cp bin/pine /opt/vdops/bin
```

# SUPPORT SERVICES

## Network Management

ARPCWATCH-2.1A15

Available from <http://ee.lbl.gov/> or Sourceforge

Modify source as follows (add the bolded text).

```
arpwatch.c
/* Source ip address */
BCOPY(SPA(ea), &sia, 4);

/* Ignore 0.0.0.0 */
if (sia == 0) {
    return;
}

/* Watch for bogons */
if (isbogon(sia)) {
    dosyslog(LOG_INFO, "bogon", sia, sea, sha);
    return;
}

report.c
/* execl(sendmail, "sendmail", "-odi", watcher, NULL); */
/* syslog(LOG_ERR, "execl: %s: %m", sendmail); */
```

```
cd /opt/vdops/src/arpwatch-2.1a15
./configure --prefix=/opt/vdops/etc
make
make install
mv /opt/vdops/etc/sbin /opt/vdops/sbin/arpwatch
mkdir /opt/vdops/etc/arpwatch
touch /opt/vdops/etc/arpwatch/arp.dat
```

### Optional:

Create /opt/vdops/etc/arpwatch/ethercodes.dat using the following procedure.

```
cd /opt/vdops/src/arpwatch-2.1a15
wget http://standards.ieee.org/regauth/oui/oui.txt
cat oui.txt | ./massagevendor > /opt/vdops/etc/arpwatch/ethercodes.dat
```

Then, load arpwatch, look at syslog for the line numbers containing errors. These lines begin with OUIs which are missing the colons that arpwatch wants to see. Fix this.

Load arpwatch with the following options:

```
arpwatch -N -i bond0
```

### MRTG-2.16.2

Available from <http://www.mrtg.org>

```
cd /opt/vdops/src/mrtg-2.16.2
./configure --prefix=/opt/vdops
make
make install
```

### MRTG-RRD.CGI

Available from <http://www.fi.muni.cz/~kas/mrtg-rrd/>

### NODEWATCH-2.X

Available from <http://www.skendric.com/nodewatch>

Just copy the script “nodewatch” to wherever you want to put it.

### SWATCH-3.2.2

This is a real-time syslog watcher, running on pooh and notifying duty for various events. It requires the following PERL modules: Time::HiRes, Date::Calc, File::Tail, Time::Date. <http://sourceforge.net/projects/swatch/> for the Web page.



```
cd /opt/vdops/src/swatch-3.2.2
perl Makefile.PL
make
make test
cp swatch /opt/vdops/script'
```

## NET-SNMP-5.4.2

Available from <http://sourceforge.net/projects/net-snmp/>

SNMP utilities, mostly used by scripts in /home/netops/bin.

```
cd /opt/vdops/src/net-snmp-5.4.2
./configure --prefix=/opt/vdops --with-mibdirs="/opt/vdops/share/snmp/mibs" --with-persistent-
directory="/opt/vdops/etc/snmp" --with-sys-contact=root --with-sys-location=J4-300 --with-
logfile="/opt/vdops/var/log/net-snmp" --with-default-snmp-version="2" --with-out-transport="TCP"
--with-perl-modules --with-mib-modules="ucd_snmp/diskio ucd-snmp/lmSensors"
make
make install
```

## TRACEROUTE-2.0.11

Available from <http://dmitry.butskoy.name/traceroute/> (or from SourceForge)

```
cd /opt/vdops/src/tcptraceroute-2.0.11
[edit Make.rules and change the section as follows:]

# install stuff
prefix = /usr/local

to

# install stuff
prefix = /opt/vdops

make
make install
```

# SECURITY

---

<sup>1</sup> Old changes, no longer needed:

Change the first line from “#!/usr/bin/perl” to “#!/opt/vdops/bin/perl”.  
Change the following line from:  
my \$File = File::Tail->new(name=>\$Filename, tail=>1, interval=>1.0);  
to:  
my \$File = File::Tail->new(name=>\$Filename, tail=>1, reset\_tail=>0,  
interval=>1.0);

## UTILITIES

### NMAP-5.20

Available from <http://www.insecure.org>.

Save backup copies of source files:

```
cd /opt/vdops/src/nmap-5.20
cp output.cc output.cc.ori
cp osscan2.cc osscan2.cc.ori
cp timing.cc timing.cc.ori
cp traceroute.cc traceroute.cc.ori
```

Edit *output.cc* and comment out the following line:

```
/* fatal("Failed to write %d bytes of data to (logt==%d) stream. fwrite
returned %d. Quitting.", len, logt, rc); */
```

Edit *osscan2.cc* and comment out the following lines:

```
if (roundNum > 0) {
/* if(o.verbose) error("WARNING: OS didn't match until try #%d", roundNum + 1); */
}
```

```
/* error("WARNING: RST from %s port %d -- is this port really open?",
hss->target->targetipstr(), hss->openTCPPort); */
```

Edit *timing.cc* and comment out the following lines:

```
if (to->rttvar > 2300000) {
/* fprintf(stderr, "RTTVAR has grown to over 2.3 seconds, decreasing to 2.0\n");*/
to->rttvar = 2000000;
}
```

```
if (o.verbose)
/* error("%s: packet supposedly had rtt of %lu microseconds. Ignoring t
ime.", __func__, delta); */
return;
```

Compile as usual:

```
cd /opt/vdops/src/nmap-5.00
./configure --prefix=/opt/vdops
make
make install
```

## POING

Available from <http://poe.perl.org/?Poing>

```
cd /opt/vdops/src/poing
cp poing.perl /opt/vdops/script
chmod 555 /opt/vdops/script/poing
```

## SPINE

Available from <http://www.cacti.net>

```
cd /opt/vdops/src/spine-0.8.7
./configure --prefix=/opt/vdops --sysconfdir=/opt/vdops/etc/spine
make
make install
```