Ethereal User's Guide

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NS Computer Software and Services P/L

Ethereal User's Guide:

by Richard Sharpe

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Chapter 1. Introduction

1.1. What is Ethereal?

Every network manager at some time or other needs a tool that can capture packets off the network and analyze them. In the past, such tools were either very expensive, propietary, or both. However, with the advent of Ethereal, all that has changed

Ethereal is perhaps one the best open source packet sniffers available today. It provides the following broad functions:

- Capture and display packets from any interface on a UNIX system
- Display packets captured under a number of other capture programs:
  - tcpdump
  - Network Associates Sniffer and Sniffer Pro
  - NetXray
  - LANalyzer
  - Shomiti
  - AIX's iptrace
  - RADCOM's WAN/LAN Analyzer
  - Lucent/Ascend access products
  - HP-UX's nettl
  - Toshiba's ISDN routers
  - ISDN4BSD *i4btrace* utility
  - Microsoft Network Monitor
  - Sun snoop

• Filter packets on many criteria

Figure 1-1 shows Ethereal having captured some packets and waiting for you to examine the packets.

Figure 1-1. Ethereal captures packets and allows you to examine their content.
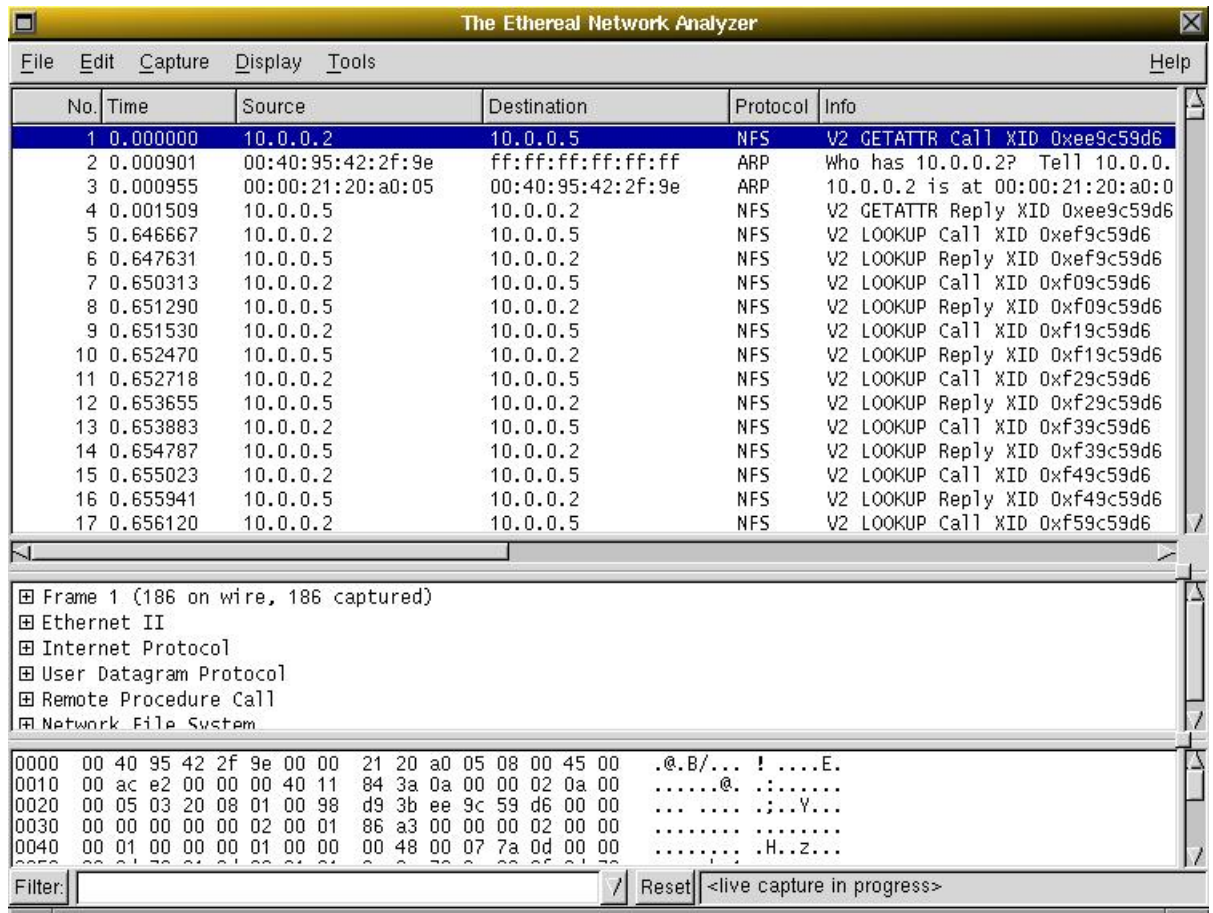
In addition, because all the source code for Ethereal is freely available, it is very easy

for people to add new protocols to Ethereal, either as modules, or built into the source.

There are currently protocol decoders (or dissectors, as they are known in Ethereal), for a great many protocols, including:

1.2. The status of Ethereal

Ethereal is an open source software project, and is released under the GPL. All source cose is freely available under the GPL. You are welcome to modify Ethereal to suit your own needs, and it would be appreciated if you contribute your improvements back to the Ethereal team.

The Ethereal source code and binary kits for some platforms are all available on the Ethereal website: http://www.zing.org.

1.3. Development and maintenance of Ethereal

Ethereal was initially developed by Gerald Combs. Ongoing development and maintenance of Ethereal is handled by the Ethereal team, a loose group of individuals who fix bugs and provide new functionality.

There have also been a large number of people who have contributed protocol dissectors to Ethereal, and it is expected that this will continue.

1.4. A rose by any other name

William Shakespear wrote: *"A rose by any other name would smell as sweet."* And so it is with Ethereal, as there appears to be two different ways that people pronounce the name.

Some people pronounce it ether-real, while others pronounce it e-the-real, as in ghostly, insubstantial, etc.

You are welcome to call it what you like, as long as you find it useful.

1.5. A brief history of Ethereal

Ethereal was initiall released in June 1998 as version 0.2.0. Not long after that Gilbert Ramirez saw its potential and contributed a low-level dissecotr to it.

In late 1998, Richard Sharpe, who was giving TCP/IP courses, saw its potential on such courses, started looking at it to see if it supported the protocols he needed. While it didn't at that point, new protocols could be easily added.

In early 1999, Guy Harris ...

1.6. Platforms Ethereal runs on

Ethereal currently runs on most UNIX platforms and the various Windows platforms. It requires GTK+, GLIB and libpcap in order to run.

Binary packages are available for the following platforms:

- AIX
- Tru64 UNIX (formerly Digital UNIX)
- Debian GNU/Linux
- Slackware Linux
- Red Hat Linux
- FreeBSD
- OpenBSD
- HP/UX
- Sparc/Solaris 8

- Windows NT and 98

If a binary package is not available for your platform, you should download the source and try to build it.

1.7. Where to get Ethereal

You can get the latest copy of the Ethereal from the Ethereal Website: http://www.zing.org. The website allows you to choose from among several mirrors for downloading.

1.8. Reporting problems and getting help

If you have problems, or need help with Ethereal, there are several mailing lists that may be of interest to you:

1.9. Where to get the latest copy of this document

The latest copy of this documentation can always be found on the Ethereal web site: http://www.zing.org. It can also be found at: TBD.

Chapter 2. Building and Installing Ethereal

2.1. Introduction

As with all things, there must be a beginning, and so it is with Ethereal. To use Ethereal, you must:

* Obtain a binary package for your operating system, or

* Obtain the source and build Ethereal for your operating system

Currently, only two or three Linux Distributions ship ethereal, and they are commonly shipping an out-of-date version. No other versions of UNIX ship Ethereal so far, and Microsoft does not ship it with any version of Windows. For that reason, you will need to know where to get the latest version of Ethereal and how to install it. The current version of Ethereal is 0.8.10.

This chapter shows you how to obtain source and binary packages, and how to build Ethereal from source, should you choose to do so.

The following are the general steps you would use:

1. Download the relevant package for your needs, eg, source or binary distribution.

2. Build the source into a binary, if you have downloaded the source

   This may involve building and/or installing any other necessary packages

3. Install the binaries in their final destinations

2.2. Obtaining the source and binary distributions

You can obtain both source and binary distributions from the Ethereal web site: http://www.zing.org. Simply select the download link, and then select either the source package or binary package of your choice from the mirror site closest to you.

> **Download all the needed files:** In general, unless you have already downloaded Ethereal before, you will most likely need to down load several source packages if you are building Ethereal from source. This is covered in more detail below.

Once you have downloaded the relevant files, you can go on to the next step.

> **Note:** While you will find a number of binary packages available on the Ethereal web site, you might not find one for your platform, and they often tend to be several versions behind the current released version, as they are contributed by people who have the platforms they are built for.
>
> For this reason, you might want to pull down the source distribution and build it, as the process is relatively simple.

2.3. Before you build Ethereal

Before you build Ethereal from sources, or install a binary package, you must ensure that you have the following other packages installed:

- GTK+, The Gimp Tool Kit.

  You will also need Glib. Both can be obtained from www.gtk.org

- libpcap, the packet capture software that Ethereal uses.

Depending on your system, you may be able to install these from binaries, eg RPMs, or you may need to obtain them in source code form and build them.

If you have downloaded the source for GTK+, the instructions shown in Example 2-1 may provide some help in building it:

Example 2-1. Building GTK+ from source

```
tar zxvf gtk+-1.2.8.tar.gz
<much output removed>
cd gtk+-1.2.8
./configure
<much output removed>
make
<much output removed>
make install
<much output removed>
```

> You may need to change the version number of gtk+ in Example 2-1 to match the version of GTK+ you have downloaded.

You should consult the GTK+ web site if any errors occur in carrying out the instructions in Example 2-1.

If you have downloaded the source to libpcap, the general instructions shown in Example 2-2 will assist in building it.

Example 2-2. Building and installing libpcap

```
tar zxvf libpcap_tar.Z
<much output removed>
cd libpcap-0.4
./configure
<much output removed>
make
<much output removed>
make install
```

```
<much output removed>
make install-incl
<much output removed>
```

Example 2-3. Errors while installing the libpcap include files

```
    /usr/local/include/pcap.h
/usr/bin/install -c -m 444 -o bin -g bin ./pcap-namedb.h \
    /usr/local/include/pcap-namedb.h
/usr/bin/install -c -m 444 -o bin -g bin ./net/bpf.h \
    /usr/local/include/net/bpf.h
/usr/bin/install: cannot create regu-
lar file '/usr/local/include/net/bpf.h': No such file or directory
make: *** [install-incl] Error 1
```

If you get the error shown in Example 2-3 when you submit the command **make install-incl**, simply create the missing directory with the following command:
```
mkdir /usr/local/include/net
```
and rerun the command **make install-incl**

Under RedHat 6.x you can simply install each of the packages you need from RPMs. Most Linux systems will install GTK+ and Glib in anycase, however, you will probably need to install the devel versions of each of these packages. The commands shown in Example 2-5 will install all the needed RPMs if they are not already installed.

Example 2-5. Installing required RPMs under RedHat Linux 6.2

```
cd /mnt/cdrom/RedHat/RPMS
rpm -ivh glib-1.2.6-3.i386.rpm
rpm -ivh glib-devel-1.2.6-3.i386.rpm
rpm -ivh gtk+-1.2.6-7.i386.rpm
rpm -ivh gtk+-devel-1.2.6-7.i386.rpm
rpm -ivh libpcap-0.4-19.i386.rpm
```

2.4. Building from Source under UNIX

Use the following general steps if you are building Ethereal from source under a UNIX operating system:

1. Unpack the source from its **gzip**'d **tar** file. If you are using Linux, or your version of UNIX uses GNU **tar**, you can use the following command:

   ```
   tar zxvf ethereal-0_8_10-tar.gz
   ```

   For other versions of UNIX, You will want to use the following commands:

   ```
   gzip -d ethereal-0_8_10-tar.gz
   tar xvf ethereal-0_8_10-tar
   ```

2. Change directory to the ethereal source directory.

3. Configure your source so it will build correctly for your version of UNIX. You can do this with the following command:

   ```
   ./configure
   ```

   If this step fails, you will have to rectify the problems and rerun **configure**. Troubleshooting hints are provided in .

4. Build the sources into a binary, with the **make** command. For example:

   ```
   make
   ```

5. Install the software in its final destination, using the command:

   ```
   make install
   ```

Once you have installed Ethereal with **make install** above, you should be able to run it by entering **ethereal**.

2.5. Installing the binaries under UNIX

In general, installing the binary under your version of UNIX will be specific to the installation methods used with your version of UNIX. For example, under AIX, you would use **smit** to install the Ethereal binary package, while under

2.6. Installing from RPMs under Linux

Use the following command to install the Ethereal RPM that you have downloaded from the Ethereal web site:

```
rpm -ivh ethereal-0.8.10-1.i386.rpm
```

If the above step fails because of missing dependencies, install the dependencies first, and then retry the step above. See Example 2-5 for information on what RPMs you will need to have installed.

2.7. Building and Installing under Windows

In this section we explore how to build and install Ethereal under Windows. For many people, simply installing from the binary packages available will be sufficient, however, for some people, rebuilding will be required.

Before installing Ethereal under any version of Windows, you must download two other packages:

1. The WinPcap packet capture binary for Windows. This can be downloaded from http://netgroup-serv.polito.it/winpcap/. You should download the version specific to your version of Windows. You can find these under the link that mentions the version number (that is, you don't want the developers pack or the source code).

2. GTK libs for Win32. These are available from the Ethereal web site in the download area as well as from www.gimp.org/~tml/gimp/win32/. However, you will find it easier to download gtk-libs-$version.zip from the Ethereal web site, rather than downloading all the approriate files from the gimp location.

2.7.1. Building from source under Windows

Add a description here.

2.8. Installing Ethereal under Windows

Once you have downloaded the files you need as discussed above and/or built Ethereal from source, you can install each of them:

1. Install WinPcap. There are instructions at the WinPcap web site for installing it under Windows 9X, Windows NT and Windows 2000. These are located at: http://netgroup-serv.polito.it/winpcap/install/Default.htm

2. Install GTK+.

3. Install Ethereal

2.9. Troubleshooting during the install

A para

Chapter 3. Using Ethereal

3.1. Introduction

By now you have installed Ethereal and are most likely keen to get started capturing your first packets. In this chapter we exlore:

- How to start Ethereal

- How to capture packets in Ethereal

- How to view packets Ethereal

- How to filter packets in Ethereal

In fact, most of the functionality of Ethereal is explored in this chapter.

3.2. Starting Ethereal

You can start Ethereal from the command line under UNIX, but it can also be started from most Window managers as well. In this section we will look at starting it from the command line.

Ethereal supports a large number of command line parameters. To see what they are, simply enter the command **ethereal -h** and the help information shown in Example 3-1 should be printed.

Example 3-1. Help information available from Ethereal

```
This is GNU ethereal 0.8.10, com-
piled with GTK+ 1.2.6, with libpcap 0.4, with libz 1.1.3, with-
out SNMP
```

```
ethereal [ -vh ] [ -kQS ] [ -b <bold font> ] [ -
B <byte view height> ]
[ -c count ] [ -D ] [ -f <capture filter> ] [ -i interface ]
[ -m <medium font> ] [ -n ] [ -P <packet list height> ] [ -
r infile ]
[ -R <read filter> ] [ -s snaplen ] [ -t <time stamp format> ]
[ -T <tree view height> ] [ -w savefile ]
```

3.3. Capturing packetsEthereal

Another para

3.4. Filtering while capturing

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Ethereal is perhaps one of blah blah...

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Ethereal is perhaps one of blah blah...

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