

Kali Documentation
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Introduction

Most games only support IPX networks and modem/direct serial link play; TCP/IP networks are not natively supported. With the right software, however, most games designed to be played over IPX LANs can be fooled into operating over the Internet. In the pages that follow, we will attempt to answer the most frequently asked questions about playing these games over the Internet, including what you need, and how to set it up.

IPX network games can be played over the Internet using a program called Kali. Kali uses the UDP protocol to send game information between multiple machines on the Internet. Kali has been used to play Descent, DOOM, Rise of the Triad, Terminal Velocity, Warcraft, VR Pool, Super Karts and other games over the Internet with opponents from as far away as Estonia.

Getting Prepared - Hardware

To use Kali, you will need the following hardware:

* If your site is directly connected to the Internet, you'll need a network interface card (NIC) for your machine. And not just any old NIC, mind you - your NIC must be supported by a packet driver if you wish to use it to play Internet games. Usually this means that your NIC must be an ethernet card, although Kali has been successfully played over token ring. We will assume that your PC is already equipped with a suitable NIC, although it may currently be in use for some other non-TCP/IP function (such as a node on a Novell network). As long as your NIC is supported by a standard packet driver, your machine can be readily converted into a Kali "playstation."

* If you are not directly connected, you'll need a high speed modem (the faster the better) as well as an account with an ISP (Internet Service Provider) which has suitable dialup facilities.

NOTE: Users with "shell accounts" or who use SLIP emulators such as TIA and SLiRP can also use Kali. See the section "Using Kali with a shell account."

*If you're currently using SLIP or PPP, but your drivers operate from under Microsoft Windows (such as Trumpet Winsock), you MUST obtain a DOS SLIP or PPP driver; your Windows-based drivers will NOT work for Kali.

Getting Prepared - Software

In addition to the hardware requirements, some software is also required to complete your setup. Before you can play, you'll need to pick up the following:

- * A packet driver. The packet driver is a standardized interface that lets Kali "talk" to an ethernet card or modem.

- * Kali, the TCP/IP network driver for IPX games.

- * Some basic network diagnostic tools, such as a PING or TRACEROUTE program. These are not absolutely necessary, but can definitely be useful for debugging and testing your setup.

Finding Kali and Related Files

To obtain Kali, log on to one of the following ftp sites (using anonymous ftp). Change to the specified directory (e.g. cd /pub/kali). Download the file kalillf.zip. This is the latest version of Kali as of this writing.

```
ftp://ftp.axxis.com/pub/kali/  
ftp://ftp.internexus.net/pub/kali/  
ftp://kali.jedi.net/kali/
```

The following Web sites also include information and some files:

```
http://www.axxis.com/kali/  
http://www.internexus.net/kali/  
http://www.teleport.com/~caustic/  
http://gremlinx.bevc.blacksburg.va.us/
```

Finding ethernet packet drivers

Many ethernet cards come with the appropriate packet drivers on a utilities diskette packaged with the card. If your card does not come with a packet driver, there is an excellent collection of freely available packet drivers called the Crynwr Packet Driver collection. You can obtain it via anonymous ftp from:

```
ftp://oak.oakland.edu/simtel/msdos/pktdrvr/pktd11.zip  
ftp://ftp.cdrom.com/pub/simtel/msdos/pktdrvr/pktd11.zip
```

Finding slip or ppp packets drivers

SLIP (or SLiRP) users should get the file slippr15.zip and PPP users should get the file ppp.zip. Both of these files can be found at the Kali sites listed above.

Diagnostic Software

If you need basic network diagnostic utilities, the WATTCP applications are freely available and include a PING program. Look for a file called apps.zip on your favorite ftp site, or find it and other wattcp sources at:

<ftp://dorm.rutgers.edu/pub/msdos/wattcp/>

NOTE: people using SLiRP will not be able to use ping utility.

Setting up the Hardware

Setting up your computer to use a DOS packet driver can be complicated for people who aren't network gurus. This section will attempt to show you all the steps needed to get the packet driver installed and functioning properly.

Ethernet Setup Procedure

Step 0: START WITH A CLEAN BOOT!!!! Set up your CONFIG.SYS and AUTOEXEC.BAT files to load as few drivers as possible. Some definite things to EXclude are memory managers (HIMEM, EMM386, QEMM, etc.) and network drivers (e.g. LSL, IPXODI). Most games don't need the former, and the latter will probably conflict with the packet driver. We recommend that you prepare an alternate configuration (the multiple configuration facility built into MS-DOS is ideal for this purpose; see your DOS manual for details) specifically for Internet games with a CONFIG.SYS portion containing only a FILES=20 line, and an AUTOEXEC.BAT portion containing only the line "prompt=\$p\$g". Be sure to include the line which loads your mouse driver (if you play your game using a mouse).

Step 1: Set up the packet driver. If you do not already have a suitable packet driver installed on your machine, now is the time to install one. Start by determining your ethernet card's IRQ setting, it's base I/O port setting, and it's memory address setting (if any). You should be able to determine this by looking at the card itself and consulting the user manual. You'll need some if not all of this information, depending upon which packet driver you use and/or type of hardware you have (for example, some IBM computers with theMicroChannel bus can determine the settings on the card automatically without you having to supply them on the packet driver command line). Unzip the appropriate driver from Crynwr Packet Driver collection archive. In our example, the packet driver is called SMC_WD.COM. By looking at the jumpers on the card and consulting the manual, I determined that the card has been set to IRQ 7, Base I/O port address 300h, and the base memory address is at segment d800h. For this example, I have chosen to use interrupt 60h for the packet driver. Packet drivers typically operate on an interrupt in the range of 60h to 80h inclusive; since nothing else in my sample system happens to be using the first available interrupt (INT 60h), I chose that. Thus, to load my packet driver, I use the command line

SMC_WD 0x60 0x7 0x300 0xd800

where 0x60 is the packet driver interrupt, 0x7 is the IRQ setting on the card, 0x300 is the I/O port base address, and 0xd800 is the memory base address (NOTE: all numbers are in C-style HEX notation). Don't worry if you don't understand what all this stuff means - as long as you use the correct numbers, your packet driver should work. NOTE: If your PC is currently part of a Novell network (e.g. Netware, Netware Lite, Personal Netware) the parameters you need can be found in a file called NET.CFG, usually located in your \NOVELL, \NWLITE or \NWCLIENT subdirectories (along with all the other drivers needed by Novell). Add the proper command line to the AUTOEXEC.BAT for your Kali configuration so that the packet driver will be loaded automatically whenever you boot using the Kali partition.

When successfully loaded, the packet driver should give a sign on message and report the ethernet address of your NIC when you load it. Chances are that if your NIC has been functioning properly for other tasks (e.g. as a node on a Novell network) then you'll have no problems here. If not, or if there are any error or warning messages, something is wrong (D'OHH!). One possibility is that one of the settings on your NIC is in conflict with those of another expansion card in your system. No two cards can have the same IRQ, I/O port, or memory address settings, nor can the memory areas of two cards overlap. Whatever the cause, you'll need to find and correct the problem before continuing.

SLIP Setup Procedure

This procedure assumes that you are using the cslipper SLIP driver mentioned earlier. If you are using a different driver, you'll need to change the commands which follow accordingly.

Step 0: Obtain Internet access from a service provider who allows SLIP connections on their terminal server. A "shell account" (where you log in to a remote UNIX host and type commands such as "telnet" and "ftp") will require a SLIP emulator called SLiRP (read the SLiRP section below before continuing). How to obtain this type of service from such a provider is beyond the scope of this document. Also, if you are using a Microsoft Windows-based SLIP or PPP driver, such as Trumpet Winsock, you MUST obtain and install a DOS SLIP or PPP driver on your machine. Kali will NOT work with Windows drivers such as Trumpet or Cameleon

Step 1: Using your favorite serial communications package, dial in to your service provider, log in, and issue whatever commands are required to change their terminal server to SLIP mode. How this is done varies from service provider to service provider and is beyond the scope of this document. Check with your service provider for more details.

Once you have logged on and enabled SLIP mode, exit your telecommunications software WITHOUT HANGING UP THE MODEM - this is VERY IMPORTANT! Any telecommunications package worth the floppy on which it comes will have a "save without hangup" command, or will prompt you when you exit to ask whether it should hang up or not.

Change to the directory where you have installed your packet driver and load it. An example command line for CSLIPPER is

```
CSLIPPER com1 vec=0x60 baud=57600
```

where com1 is the serial port to which your modem is connected, 0x60 is the interrupt vector the packet driver should use, and 57600 is the DTE baud rate (the baud rate between the computer and the modem, not necessarily the speed at which the modem has connected to the remote system). The packet driver will display a signon message and load itself into memory.

Your SLIP packet driver is now loaded and ready for testing.

Using Kali with a PPP account

(from the PPP.FAQ)

Here's a quick rundown on setting up PPP.EXE and Kali for a PPP connection. For complete details on each program, see the related documentation.

First, you need a batch file to run ppp.exe. Here is an example of a batch file and what each option does:

```
DIAL.BAT
-----
ppp /c 2 /d script /s 57600
```

The "/c 2" tells PPP to dial out on COM2. The "/d script" tells PPP to use the file DIAL.PPP as a script. The "/s 57600" tells PPP to connect at 57600 (I've got a 14.4 modem and 16550 UART). As of this writing, 57600 is the fastest speed supported by ppp.exe. If you don't have a 16550 uart, you should select 38400 for the speed.

Now you need a login script. The login script must be in the file called dial.ppp. Here is an example script:

```
DIAL.PPP
-----
send "ATZ\r"                ;reset the modem
recv 3000 "OK\r\n"          ;wait 3 seconds for OK response from
modem
send "atdt1234567\r"        ;dial your provider; the \r is for
RETURN
recv 60000 "login:"         ;wait 6 seconds for login prompt
send "username\r"          ;send your username and RETURN
recv 10000 "Password:"      ;wait 1 second for password prompt
send "password\r"          ;send your password and RETURN
```

Note: the login and password prompts much match those used by your provider.

Put your nickname in kali.cfg and then put your network information in watterp.cfg. In many cases, this information will change each time you connect. In this case, you will have to re-edit watterp.cfg each time.

Using Kali With a Shell Account

To use Kali with a shell account, you need a SLIP emulator. The only SLIP emulator that current supports port-redirection (something very important to Kali) is a program called SLiRP. Many internet providers, including netcom, use TIA for SLIP access. When TIA 2.0 comes out, it *might* work with Kali. In the meantime, you TIA users can use SLiRP instead.

You *must* use the latest version of SLiRP, 0.9k. The older versions just won't work with Kali (problems with the UDP redirection code). To get SLiRP, login into your shell account and from there download the SLiRP source code from your favorite Kali site or the latest can always be found at:

```
ftp://blitzen.canberra.edu.au/pub/slirp/
```

The instructions for installing SLiRP are included with this program. Basically, you will need to unzip the archive first by typing:

```
gunzip slirp-0.9k.tar.gz
```

You then must untar the archive by typing:

```
tar -xvf slirp-0.9k.tar
```

This will create a directory structure called slirp-0.9k/. Go to the src subdirectory by typing `cd slirp-0.9k/src`. Type:

```
configure
```

Then type:

```
make
```

This will create a file called slirp. Copy this file to your home directory. Something like:

```
cp slirp ~
```

might work. Then, using your favorite text editor, create a file called `.slirprc` in your home directory. Put the following in this file:

```
redir udp 2213 to aaa.bbb.ccc.ddd:2213
baudrate 28800
mtu 2000
```

IMPORTANT: Replace aaa.bbb.ccc.ddd with the ip number of the host (unix) machine. Use this same number in your wattcp.cfg file. Your ip number will be the same as that of your host. Do NOT use the ip number reported by SLiRP anywhere in your configuration. If you do, it just won't work! Also, the baudrate is not the actual speed of the modem. It's hard to explain. Read the SLiRP docs for more info. Basically, higher numbers have faster through-put and slower response; lower numbers have slower through-put and faster response. You can experiment.

Next, follow all the steps for using SLIP above. As far as connecting to your SLIP provider, connect to your shell account as you normally would. If you are connecting through a terminal server, be sure to get an 8 bit connection using rlogin. Some terminal servers have commands like "terminal download" or "set session 1 passall" to provide a better connection for pseudo SLIP users. If you have trouble with Kali working through a terminal server, be sure to look into this. After attaching and logging in, just type slirp. Exit your communication program without hanging up and continue like other SLIP users (see above).

NOTE: Since SLiRP users must share the ip number of their host, two Kali players on the same host will have to use different ports for Kali. If you get an error when running SLiRP that says you don't have permission to redirect the port, try using a different port. Try 2214 instead. IMPORTANT: if you use a different port, be sure to add a line in your kali.cfg file that reads something like:

```
port = 2214
```

Also, if you plan to host a Kali VSN, the other players will have to enter your port number on the command line like this:

```
Kali aaa.bbb.ccc.ddd 2214
```

Setting up and using Kali

Step 1: Set up a new directory where Kali and all its configuration files will be kept. You can name this directory anything you like (we suggest c:\Kali). UnZIP the kali103.zip file into this new directory, and make it the default (chdir to it). We will refer to this directory as the "Kali directory."

Step 3: Set up your WATTCP.CFG file. Your WATTCP.CFG file contains important parameters used by the WATTCP TCP/IP kernel built into Kali. These values MUST be entered correctly if you wish to make a connection with another Kali node. In preparation for this, you'll need several bits of information. Contact the network administrator for your site and find out the IP address for your machine, the IP address for your gateway or router, the IP address of at least one Domain Name Server local to your site, and your netmask value. The three IP addresses will each consist of four groups of digits separated by periods. In our example, the machine's IP address is 128.191.23.5, the gateway is 128.191.23.1, the netmask is 255.255.255.0, and the nameserver address is 128.191.44.67. NOTE: it is important to use the numeric IP addresses, not the actual host names. NOTE: If you have other Internet programs currently installed on your machine, such as a Gopher client, the Trumpet newsreader, or the iFrag program, you can probably find the information you need in the configuration files used for those programs. If the application is based on the Waterloo TCP package, it will have it's own WATTCP.CFG, in which case you can simply copy it over to your Kali directory. When you have collected all this information, use your favorite ASCII text editor to edit the WATTCP.CFG file in your Kali directory. Edit or add the lines beginning with my_ip=, gateway=, nameserver=, and netmask=. On our example machine, the WATTCP.CFG file looks like this:

```
my_ip=128.191.23.5
gateway=128.191.23.1
netmask=255.255.255.0
nameserver=128.191.44.67
```

Save the changed file and exit back to DOS.

If you don't know the proper values for some or all of these settings, you can see if your site runs what is called a BOOTP server. If your LAN has a BOOTP server installed, you can put "BOOTP" on the "my_ip=" line and leave the other lines out. Kali

will contact the BOOTP server and determine all the settings it needs to communicate with other machines on the Internet. If your site is not running a BOOTP server, then your task is a little more difficult (but not impossible!)

If you know your machine's IP address, but you can't determine the other values, you can often get away with some educated guesswork. For instance, the gateway for a subnet usually has an IP address ending in .1, as is the case with our example. Thus, if your IP address is xxx.yyy.zzz.www, try setting your gateway's IP address to xxx.yyy.zzz.1. As for the subnet mask, a common value for this parameter is 255.255.255.0. In some cases, the gateway value can be something like xxx.yyy.1.1 with a corresponding netmask value of 255.255.0.0 - if one doesn't work, it can't hurt to try the other. Finally, if you don't know your nameserver's IP address, you can probably get by without it for the purposes of playing Internet games. Since you'll be specifying IP addresses for all of your opponents' machines, a nameserver lookup won't be necessary to resolve their addresses.

Your basic setup is now complete. Please skip ahead to the section on testing your TCP/IP setup.

Testing your TCP/IP Setup

Step 1: At this point, your packet driver should be loaded and active. Now you'll use the network diagnostic programs obtained earlier to test the connection. For example, if you are using the WATTCP application suite, unzip the TCPINFO and PING programs from the WATTCP apps archive into your Kali directory. At the DOS prompt, type:

```
TCPINFO
```

and press the <Enter> key. If your WATTCP.CFG values are set up correctly, and if your packet driver and net connection are functional, you'll see a couple of screens of information about your system, including your ethernet address and the parameters you specified in the WATTCP.CFG file.

If everything looks OK, the next step is to use the PING program to attempt to establish contact with your subnet gateway. At the DOS prompt, type

```
PING <yourgateway's.numeric.ip.address>
```

and press the <Enter> key. After a brief delay, you should see a message telling you that the host is responding, as well as the round trip time for PING's test packets. If you see the "Timeout" error message, then something is wrong with your setup; if your PC is unable to reach your gateway, it will be unable to reach the rest of the Internet as well, since all network packets which are sent to nodes outside of your local area network must pass through your gateway. For our sample system, we would type:

```
ping 128.191.23.1
```

If your gateway PING was successful, try PINGing your Domain Name Server (at the IP address you specified in WATTCP.CFG) as well as some well-known site on the internet (like ftp.cdrom.com). These will test your machine's ability to connect with other machines outside of your subnet as well as those outside of your site. All of these PINGs should result in a "host responding" message with a round trip time. If any of these attempts fails, recheck your entries in WATTCP.CFG and/or get some help from your network administrator. Examples for our test system:

```
ping 128.191.44.67
```

Put Me in, Coach - I'm Ready to Play!

All right! Kali is now installed and ready for carnage! For this initial test, I have bribed 3 of my good friends with the promise of Papa Del's Pizza, after which they readily agree to assist me. We go over to the local computer lab (the one with P-90s, 21" monitors, and GUS soundcards at every station) and install packet drivers as outlined above. I note my IP address, and pass it along to my friends. From my Kali directory, I start Kali by typing

Kali

and pressing the <ENTER> key. My friends each start Kali by typing Kali followed by my machine's IP address, like so:

Kali 128.191.66.24

As each of my friends connects, his copy of Kali sends its IP address to my KaliNode, and my KaliNode responds with a list of all the other KaliNodes currently attached to mine. That way, each KaliNode knows the addresses of all the other KaliNodes in our game.

Once we have Kali loaded, we switch to our game directory (in this case c:\games\descent) and load our games in the usual way. My friend Tree begins a multiplayer game, and the rest of us join in. After about 10 minutes of furious firefights, another player enters the lab and asks to join our game. We invite him to join, and he sits down at his computer, loads Kali with

Kali 128.191.66.26

(which is Tree's IP address). He then loads Descent, selects multiplayer from the menu, and is able to join our game in progress. Notice that the newcomer did not specify my IP address, but rather Tree's. It makes no difference which KaliNode he contacts, since he can receive the complete nodelist from any one of them. After a long and satisfying game in which I beat Tree by a 3:2 score ratio(*), we decide to take a break and head over to the nearest Taco Bell.

Kali Servers and Kali Chat

Kali Servers are special Kali nodes that run 24 hours a day, all year round. The purpose of Kali Servers is to provide a common meeting place for Kali players. Here is the most recent list of Kali Servers:

ip#	Name
---	----
204.96.20.10	Kali Central
199.233.91.1	kali.jedi.net
205.199.96.2	AXXIS Server
204.97.214.4	CastleNet
193.130.144.1	FlexNet

To connect to a Kali Server, just type:

```
Kali <server ip#>
```

Once connected you will see a list of other people wanting to play games. Next to each name you will see what program they are running. If you see anyone running DESCENTR, then you know that a game of registered Descent is probably already underway and you can go ahead and load Descent and join the game. If you see people running KCHAT, then you know they are wanting to chat. Run Kali Chat by typing:

```
kchat
```

(Be sure to edit the kchat.cfg file)

The chat program is a rather simple IRC-like chat program. You can talk to other players and decide which of the many IPX games you want to play.

A Final Thought

Killing your friends across the Internet can be VERY addictive. Have fun, but don't lose your "real" life just to play a game!

(*) Hey, since I'm making up this hypothetical example scenario, I might as well go whole hog, right? ;-)

Registering Kali

Like so many of the games it supports, Kali is shareware. The price of Kali is \$20 (US dollars). When you register, you will get your own personal serial number and key to unlock the full power of Kali. The shareware version has a 15 minute time limit; the registered version will let you play until you drop.

Once you register, you will be assured free upgrades when Kali is improved...even if the price goes up in the future.

Send registrations (US check or money order preferred) to:
Jay Cotton
PO Box 282
Franklin Springs, GA 30639-0282

*include your email address for faster response!

For faster delivery and the convenience of credit cards, call Axxis at the following number:

1-801-565-1443 (this is NOT 1-800; it is NOT a toll-free call)

To obtain Kali, log on to one of the following ftp sites (using anonymous ftp). Change to the specified directory (e.g. cd /pub/kali). Download the file kali11f.zip. This is the latest version of Kali as of this writing.

<ftp://ftp.axxis.com/pub/kali/>
<ftp://ftp.internexus.net/pub/kali/>
<ftp://kali.jedi.net/kali/>

The following Web sites also include information and some files:

<http://www.axxis.com/kali/>
<http://www.internexus.net/kali/>
<http://www.teleport.com/~caustic/>
<http://gremlinx.bevc.blacksburg.va.us/>

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