

Linux XDMCP HOWTO

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XDMCP stands for "X Display Manager Control Protocol". It provides a mechanism for an Xterminal to request a session from a remote host. This document describes how to setup XDMCP.

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1. Introduction

XDMCP stands for "X Display Manager Control Protocol". It provides a mechanism for an Xterminal to request a session from a remote host. This document describes how to setup XDMCP.

Some of us running Linux (like me) are looking for the best parts of Linux. Among them is the ability to re-use old systems (like 486 CPUs) as a client (with the Win32 client; like Hummingbird's Exceed) to run Linux from any PC. It is somehow very surprising that there aren't many documents on the internet which guide you step by step on how to set this up. Essentially, by using XDMCP, you can create a cheap solution of a client and server environment.

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You are strongly recommended to take a backup of your system before major installation and backups at regular intervals.

1.3. Feedback

Feedback is most certainly welcome for this document. Without your submissions and input, this document wouldn't exist. Please send your additions, comments and criticisms to the following email address : [<tomchao@lucent.com>](mailto:tomchao@lucent.com).

2. The Procedure

This section details the procedure for setting up and using XDMCP.

2.1. System

I have tested the setup running an X Server that listens to an XDMCP session on Red Hat 6.0, 6.2 and Red Hat 7.0. I have not had a chance to test it on any other Linux flavors. If you have successfully setup one other than Red Hat platform, please share it with us. My server hardware is an IBM PC clone running an Intel Pentium II 400 Mhz with 128 MB memory and 30 MB ATA-66 Hard Drive. I use a 3COM 10/100 Fast Ethernet (3C509B) NIC. I setup the X Server to accept 6 session clients.

2.2. Client

I am using Hummingbird Exceed 6.1 with Service Pack 1 on Windows 98 SE, Windows NT 4.0 and Windows 2000 Pro.

2.3. Server Preparation

To prepare your X Server for XDMCP session, you need to make sure the following are properly installed:

1. Install your Linux OS. In my case, I installed Red Hat 6.2 (Custom Installation).
 2. Setup your Networking. To test it out, **ping** and **telnet** are good comamnds to use to determine if your network works.
 3. Setup X. Do *not* setup with a resolution higher than what the clients are able to use for their display. Test the X Server by typing either **startx** or **telinit 5**. Make sure X is running properly.
 4. Creates the necessary user accounts (and associated groups) you will need for client access via the XDMCP client.
-

2.4. Steps to Complete the Procedure

These are steps I used to setup the Server for accepting XDMCP requests:

1. Modify `/etc/rc.d/init.d/xf86` and make the following changes. Change all (this is where the Font Server port):

```
daemon xf86 -droppriv -daemon -port -1
```

to:

```
daemon xf86 -droppriv -daemon -port 7100
```

2. In `/etc/X11/xdm/Xaccess`, change (this allow all hosts to connect):

```
##*      # any host can get a login window
```

to:

```
* # any host can get a login window
```

3. Edit `/etc/X11/gdm/gdm.conf`. This activates XDMCP, causing it to listen to the request. Change this:

```
[xdmcp]
Enable=0
```

to:

```
Enable=1
```

Make sure "**Port=177**" is at the end of this block.

4. Now edit `/etc/inittab` and change the following line:

```
id:3:initdefault:
```

to:

```
id:5:initdefault:
```

Before changing this line, you can use the **telinit** command to test prior to modifying the line. Use either **telinit 3** to set to level 3, or **telinit 5** to set to level 5, graphics mode (you can issue this command on the second machine that telnets into this server).

5. Change the XServers file located at `/etc/X11/XServers` by adding these lines to get 4 xdm (or gdm) sessions running so that 4 different users can log in (you can add more depending on how powerful your server is).

```
:0 A local /usr/X11R6/bin/X :0
:1 B local /usr/X11R6/bin/X :1
:2 C local /usr/X11R6/bin/X :2
:3 D local /usr/X11R6/bin/X :3
```

6. Locate `/etc/X11/xdm/Xsetup_0` and **chmod 755** this file.
7. Edit the `XF86Config` file in `/etc/X11` and change the line:

```
FontPath "unix:-1"
```

to:

```
FontPath "unix:7100"
```

8. Add this line to the end of `/etc/inittab`:

```
x:5:respawn:/usr/bin/gdm
```

You are now ready to run a test.

2.5. Testing

To test if your XDMCP X Server is now ready to accept connections, do these steps. I find it easier using the X Server and another machine to test:

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1. (Though you don't need to; it doesn't hurt...) Reboot the machine (I am assuming you are running level 5).
 2. Make sure the Graphical login page comes up. Make sure the display resolution and mouse work. Log in from the console to see if the local access is OK. If OK, do not log off.
 3. Setup Hummingbird Exceed to either query this machine (using the IP address or fully qualified DNS name) and try to connect to the X server. You should see the X Session come up and the login screen appear.
 4. If possible, test the maximum number of allowed login sessions. This will ensure access is open to only this number.
-

3. Troubleshooting

- If X cannot come up and is broken:

If X is broken and the connection fails, most of the time it has this error messages:

```
_ FontTransSocketUNIXConnect: Can't connect: errno = 111
failed to set default font path 'unix:-1'
Fatal server error:
could not open default font 'fixed'
```

This is likely due to xfs not finding the correct port for the Font Server. To resolve this, check steps 1 and 7 above. Make sure all the ports are pointing to (port) 7100 and make sure you have the following fonts installed (if not re-install the XFree86 font packages):

```
FontPath "/usr/lib/X11/fonts/75dpi/"
FontPath "/usr/lib/X11/fonts/misc/"
FontPath "/usr/lib/X11/fonts/CID"
FontPath "/usr/lib/X11/fonts/Speedo"
FontPath "/usr/lib/X11/fonts/100dpi"
```

Use the command **startx** (on local) to restart the X server (or use **telinit 5**).

- If Exceed has no respond:

In this case, most likely your xdm (or gdm, depending upon which is used in `/etc/inittab`) is not starting correctly. Issue the command: **ps -ef | grep gdm** (or **ps -ef | grep xdm** if xdm is used).

If the process is not running, check step 8 on the setup above (make sure there are no typo's and that the correct path is given). Restart X using the command **telinit 5**.

4. XDMCP and GDM (Gnome Display Manager)

The following is taken from the [Gnome Display Manager Reference Manual](#):

GDM also supports the X Display Manager Protocol (XDMCP) for managing remote displays.

GDM listens to UDP port 177 and will repond to QUERY and BROADCAST_QUERY requests by sending a WILLING packet to the originator.

GDM can also be configured to honor INDIRECT queries and present a host chooser to the remote display. GDM will remember the user's choice and forward subsequent requests to the chosen manager.

GDM only supports the MIT-MAGIC-COOKIE-1 authentication system. Little is gained from the other schemes, and no effort has been made to implement them so far.

Since it is fairly easy to do denial of service attacks on the XDMCP service, GDM incorporates a few features to guard against attacks. Please read the XDMCP reference section below for more information.

Even though GDM tries to outsmart potential attackers, it is still adviced that you block UDP port 177 on your firewall unless you really need it. GDM guards against DoS attacks, but the X protocol is still inherently insecure and should only be used in controlled environments.

Even though your display is protected by cookies the XEvents and thus the keystrokes typed when entering passwords will still go over the wire in clear text. It is trivial to capture these. You should also be aware that cookies, if placed on an NFS mounted directory, are prone to eavesdropping too.

5. Additional References

Some additional references on this subject include:

- [xdmcp/udp](#)
- [XDMCP Documentation](#)
- [Should you be running XDMCP?](#)
- [X Window System Terminals](#)
- [A second way of using XDM](#)