

Linux For Hams

Orv Beach

W6BI

More Linux History

- But hasn't really taken over the desktop.
 - Microsoft monopoly of built PCs
 - Threatened to revoke Windows discounts for any vendor that offered PCs with a non-Windows OS.
 - Eventually ruled a monopoly in court
 - People use the OS that comes with their computer – with Linux on it, use remains limited to 2-3%

A Bit of Linux History

- Started as a desktop OS in 1991
- Has expanded to servers (including supercomputers), firewalls, routers, set top boxes, phones, DVRs, phone switches, cell phones, automobile entertainment systems, etc., etc., etc.
- But hasn't really taken over the desktop.

Linux on the Desktop

- Many different varieties – just like cars
- Like cars – 95% the same...
- Biggest differences:
 - The Graphical User Interface (that mousey-clicky thing on the screen)
 - Package Management (can also be mousey-clicky)

The Graphical User Interface (GUI)

- *Windows**
- GNOME
- Unity (only on Ubuntu, by Canonical)
- Plasma
- LXDE (lighter weight*)
- XFCE (lighter weight*)

* lighter weight = more admin effort

Linux is NOT Windows

- No drive letters
 - “C:” → “/”
- Highly-resistant to exploits
- No licensing
- Email attachments aren't executable

Linux is NOT Windows

- OS, drivers & utilities are the chassis & drivetrain of the car
- UI is the body & interior
- Can run different GUIs
 - KDE, GNOME, XFCE, LXDE on Fedora, Ubuntu, etc.
 - GUI not mandatory
 - Without GUI, looks like a DOS computer on steroids

The Command Line

- Like DOS – but much more powerful
- Like DOS, ~~hundreds~~ thousands of commands
- Like DOS, you only usually use a couple dozen.
 - Ex: mkdir, rmdir, cd, etc.
 - DOS – Unix cheat sheet:
<http://tinyurl.com/qxgo9jo>

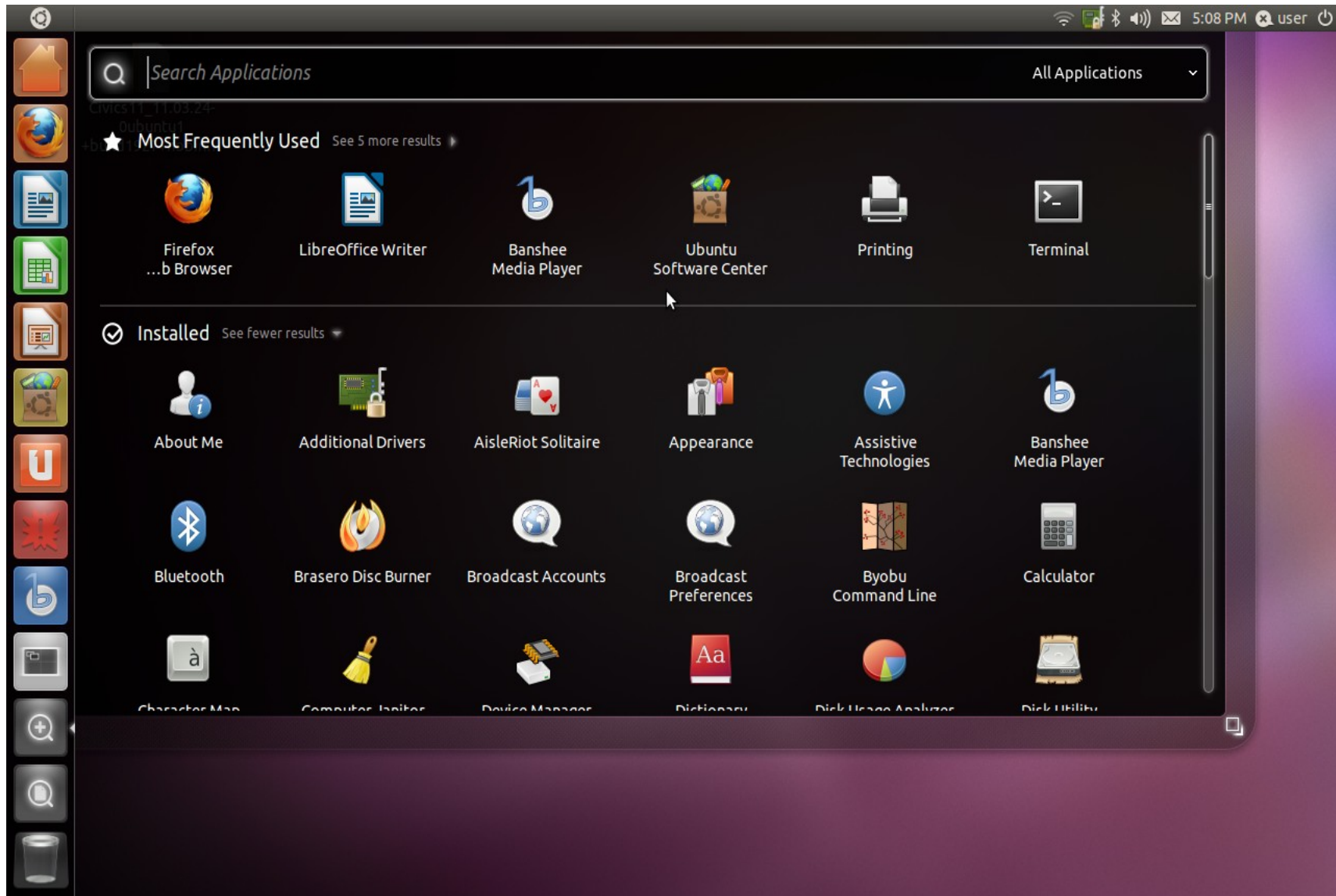
Administration

- Regular user accounts can't modify system files or install software in system directories
- “root” account (or root authentication) used to do administration
- Vastly more secure than legacy Windows systems

“Repositories”

- Standard repositories
- Add-ons
 - Available packages:
 - Ubuntu + Universe repository: 52,000
 - Added internally to OS
 - Fedora + RPMFusion repository: 42,000
 - <http://rpmfusion.org/> ← installation instructions

Unity (on Ubuntu)

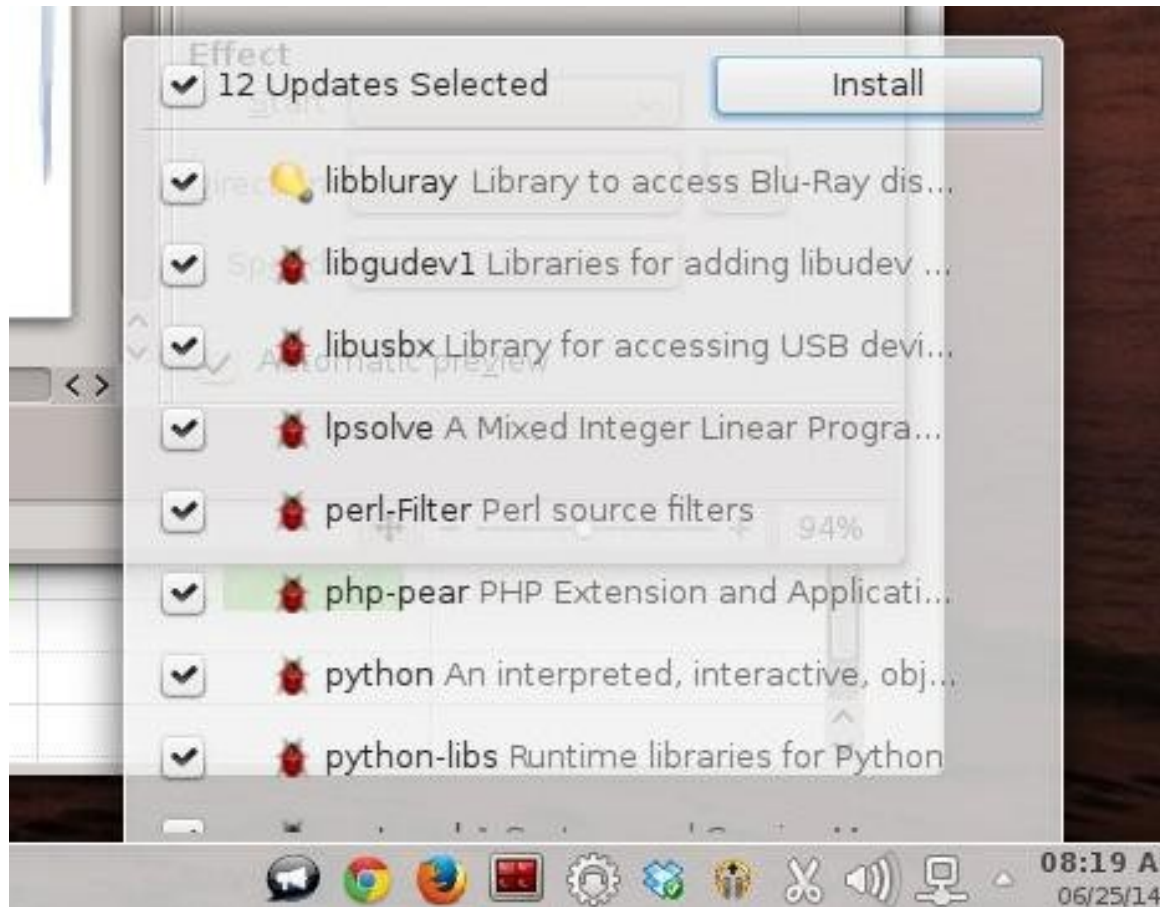


Plasma (on Fedora)

The screenshot displays a Fedora Linux desktop environment with Plasma 4.11. The desktop is characterized by a blue and white theme. A search bar is located in the top left corner, and a system tray is positioned in the bottom right. A red circle highlights the system tray area, which contains icons for network, volume, and power. The desktop is populated with several windows, including a terminal window showing system updates, a presentation window titled 'The Linux Desktop', and a Google search window for 'kde desktop screenshots'. The taskbar at the bottom includes icons for Applications, Computer, Recently Used, and Leave. The system tray also shows icons for Mail, Misc, Work, and Ksnapshot. The system clock in the bottom right corner indicates the time as 02:56 PM on 02/09/14.

- The Graph
- GNOME
- Unity
- KDE Softw
- LXDE
- Etc, etc, et

Plasma (on Fedora)



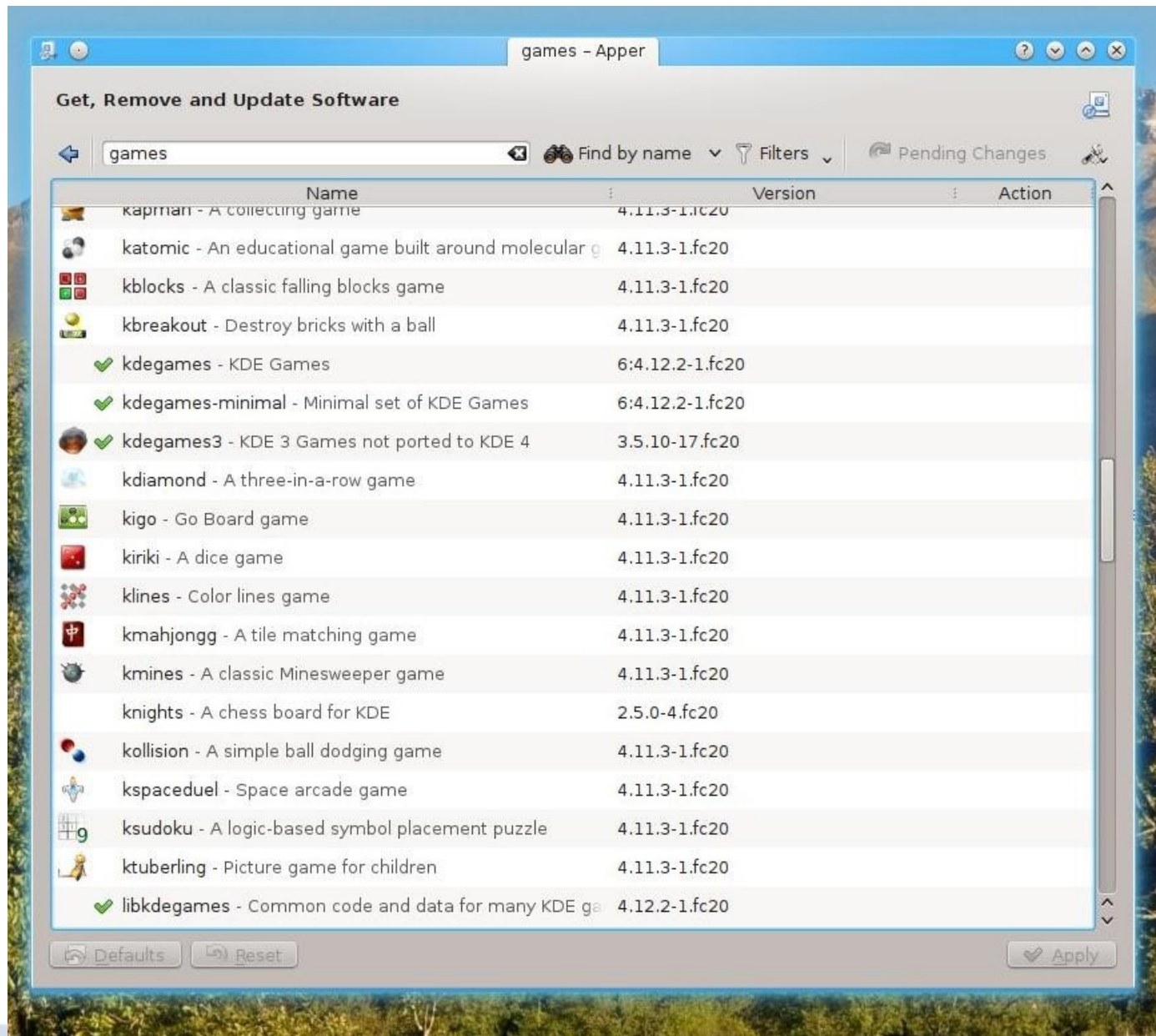
LXDE Desktop (on LXLE)



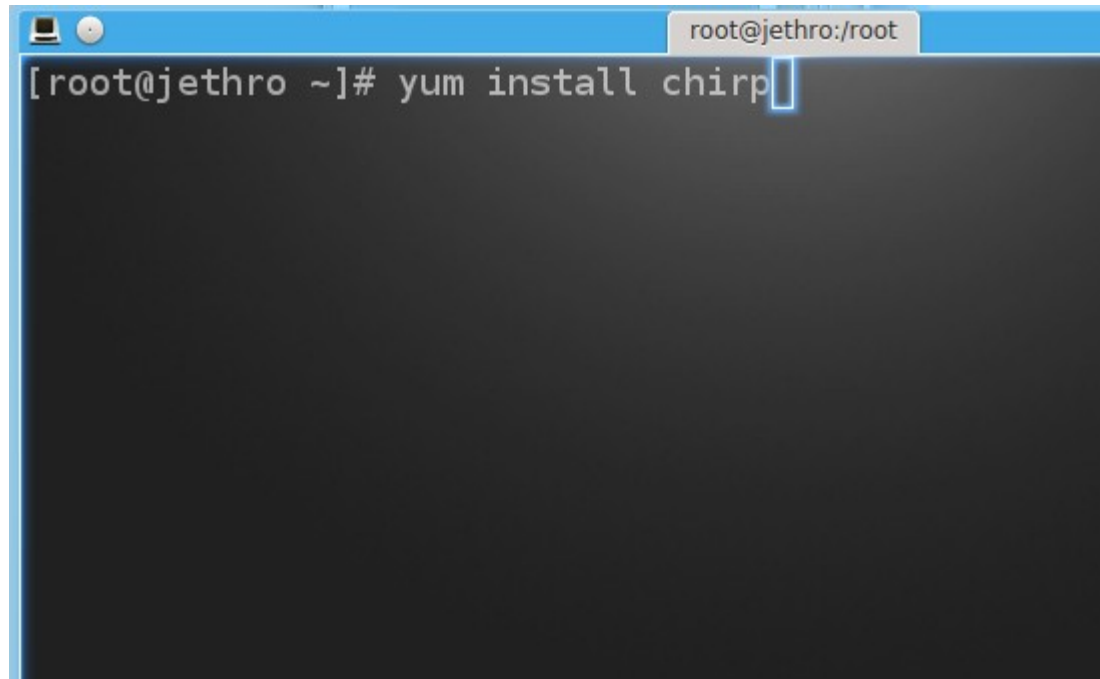
The Linux Desktop(s)



How to install software!



Or:

A terminal window with a blue title bar. The title bar contains a window icon, a close button, and the text 'root@jethro:/root'. The terminal content shows a root prompt '[root@jethro ~]#' followed by the command 'yum install chirp' with a white cursor at the end of the line.

```
root@jethro:/root  
[root@jethro ~]# yum install chirp
```

Ham Radio Software for Linux

- Not as common as Windows versions
- Much more plentiful now than in the past
- Most ham software now in RPMFusion
- Find what you're looking for at <http://www.dxzone.com/catalog/Software/Linux/>
- Look for it in Apper (software installation manager)
- Install it
- Play with it!

Chirp

CHIRP

File Edit View Radio Help

Generic CSV: Untitled.csv* X

Memories Memory range: 1 - 250 Go Special Channels Show Empty

D-STAR	Loc	Frequency	Name	Tone Mode	Tone	ToneSql	DTCS Code	DTCS Pol	Duplex	Off
	1	145.110000	W7EXH	Tone	100.0	88.5	023	NN	-	0.60
	2	145.110000	KB7PSM	Tone	103.5	88.5	023	NN	-	0.60
	3	145.110000	W7EXH	Tone	100.0	88.5	023	NN	-	0.60
	4	145.110000	KB7LNR	Tone	162.2	88.5	023	NN	-	0.60
	5	145.130000	K7TVL	Tone	100.0	88.5	023	NN	-	0.60
	6	145.150000	W7NYW	Tone	100.0	88.5	023	NN	-	0.60
	7	145.150000	WA7ROB	Tone	94.8	88.5	023	NN	-	0.60
	8	145.150000	W7NYW	Tone	110.9	88.5	023	NN	-	0.60
	9	145.150000	WA7TYD	Tone	162.2	88.5	023	NN	-	0.60
	10	145.150000	N7EZY	Tone	162.2	88.5	023	NN	-	0.60
	11	145.170000	W7NYW	Tone	110.9	88.5	023	NN	-	0.60
	12	145.170000	W7EXH	Tone	100.0	88.5	023	NN	-	0.60
	13	145.190000	WA7ABU	Tone	100.0	88.5	023	NN	-	0.60
	14	145.190000	K6QIE	Tone	162.2	88.5	023	NN	-	0.60
	15	145.190000	W7OC	Tone	146.2	88.5	023	NN	-	0.60
	16	145.190000	W7NTO	(None)	88.5	88.5	023	NN	-	0.60
	17	145.210000	WA6RHK	Tone	136.5	88.5	023	NN	-	0.60
	18	145.210000	N7HTN	Tone	110.9	110.9	023	NN	-	0.60
	19	145.210000	KA7CNK	Tone	88.5	88.5	023	NN	-	0.60

[0] Completed Getting memory 250 (idle)

linrad

The screenshot displays the Linrad software interface, which is a software-defined radio (SDR) application. The main window is titled "Linrad-02.39" and shows a spectrum analyzer with a frequency range from 30000.0 to 100000.0. The spectrum shows several peaks, with the most prominent one at 144.075 MHz. The interface is divided into several sections:

- Top Panel:** Shows the frequency range and a list of time-stamped data points on the left side.
- FlexRadio Systems PowerSDR Beta v1.10.4 SVN: 1679:** This section contains the main controls for the SDR. It includes:
 - VFO A:** Tuning to 144.075 000 MHz (2M CW).
 - VFO B:** Tuning to 7.000 000 MHz (40M Extra CW).
 - Display:** A spectrum analyzer showing a peak at 144.075 MHz with a signal strength of -94.1 dBm.
 - RX Meter / TX Meter:** Shows a signal strength of -86.2 dBm.
 - Band - VHF+:** A table of frequency bands.
 - Mode - SPEC:** A table of modulation modes.
 - Filter - 96kHz:** Controls for the audio filter.
 - Mode Specific Controls - CW:** Controls for CW mode, including CW Speed (25) and Pitch Freq (600).
- Bottom Panel:** Contains various settings and status information, including:
 - SPLIT:** A > B, 0 Beat, IF > V.
 - DSP:** NR, ANF, NB, NB2, SR, BIN.
 - Display Mode:** Spectrum, AVG, Peak.
 - MultIFX:** Controls for multi-frequency processing.
 - Mode Specific Controls - CW:** Iambic, Disable Monitor, Show TX CW Frequency, Break In, Delay (ms).
 - Status:** Date/Time (10/28/2007, LOC 08:52:57), CPU % (50.8).

The interface is running on a Windows operating system, as indicated by the taskbar at the bottom.

fldigi

The screenshot displays the fldigi software interface. At the top, the title bar reads "fldigi" with standard window controls. The menu bar includes "Files", "Op Mode", "Configure", "Rig", "Help", "Audio", "TUNE", and a close button. Below the menu bar, a form contains fields for "Freq:" (14070.961), "Time:" (2056), "Call:" (W1NDY), "Name:" (Alan), "Rst(r):Rst(s):Qth:" (599 599 Gold Beach, Oregon), "Loc:" (Gold Beach, Oregon), and "QRZ" (Clear). A "14070" dropdown menu is visible, along with an "AZ:" field and a "Save" button.

The main text area contains the following communication log:

```
CQ CQ de W1NDY W1NDY
CQ CQ de W1NDY W1NDY
Oregon Oregon
PSE K W1NDY W1NDY de AB0VI AB0VI AB0VI k
AB0VI de W1NDY AB0VI de W1NDY

Hi Bertram,
Report : 599 599
Name : Alan Alan qth Gold Beach, Oregon Gold Beach, Oregon Loc CN72tk
I am beaming Northeast, is signal OK, or??
Location is OREGON coast.
How copy? BTU Bertram, AB0VI de W1NDY pse k
```

Below the text area is a frequency display with a waterfall plot. The frequency scale ranges from 14070.5 to 14072.5 kHz. A red vertical line is positioned at 14071.0 kHz. The waterfall plot shows a dense signal at this frequency. To the right of the waterfall plot is a circular display, likely a phase-locked loop (PLL) or a similar indicator.

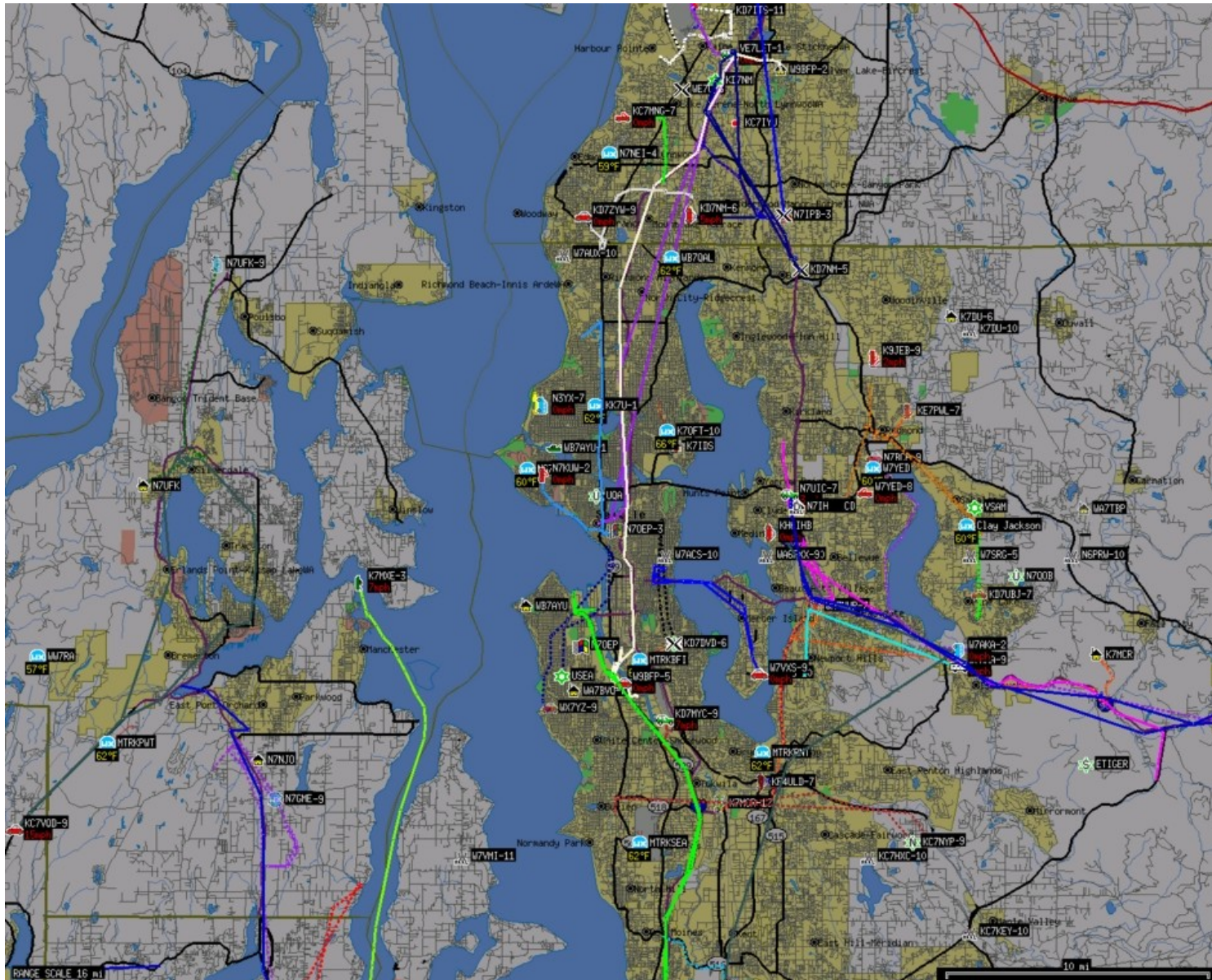
The bottom control panel includes a mode selector (CQ, ANS, QSO, KN, SK, Me, QTH, Brag, Tx, Rx, Alt) and a set of controls for "clr", "Wtr", "x1", "NORM", "961", "0", "70", "QSY", "M", "Lk", "Rv", "T/R", "BPSK31", "s/n -2 dB", "imd 0 dB", "Afc", and "Sql".

klog

The screenshot shows the Klog software interface with the following components:

- Menu Bar:** File, Tools, Setup, DXCluster, Help
- Toolbar:** Icons for file operations and settings.
- Control Panel (Top Left):** Includes a power button, a text input field, a mode dropdown (PSK31), a band dropdown (20M), a date/time selector (31/01/2015 23:28:32), and Clear/Ok buttons.
- Logging Tabs (Middle Left):** QSO, QSL, Remarks, Others, My Data. The QSO tab is active.
- QSO Entry Form (Middle Left):** Contains RST(tx) and RST(rx) fields (5, 9, 0), TX Freq and RX Freq fields (14.070), Name and Locator text boxes, and QTH text boxes.
- Info Panel (Right):** Includes Info, Awards, and Search tabs. A large button says "NEW ONE, WORK IT!". Below are frequency selection buttons (10, 15, 20, 40, 80, 160, 6, 12, 17, 30, 2, 70cm), Continent, Prefix, CQ, and ITU dropdowns, and Short Path/Long Path buttons with unit options (deg, Km).
- Log Panel (Bottom):** Includes Log, Cluster, DX Map, and DXCC tabs. A table header is visible with columns: Numb, Date, UTC, QRZ, RST(tx), RST(rx), Band, Mode, Power.

xastir



GRIG (GNU Rig)

The screenshot displays the GRIG (GNU Rig) software interface, which mimics a physical radio control panel. The window title is "GRIG:" and it includes a menu bar with "Radio", "Settings", "View", and "Help".

On the left side, there are three buttons: "Power", "PTT", and "Lock". Below these are two dropdown menus: "ATT OFF" and "PREAMP OFF".

In the center-left, there is a semi-circular scale labeled "S UNITS" with markings from 1 to 10 and a "DB" label. Below the scale are two dropdown menus: "0..5" and "None".

The central display area is a blue rectangle showing "VFO A" and "RIT" settings. The frequency is displayed as "10 106.000 kHz" and the RIT offset is "0.00 kHz".

To the right of the display is a numeric keypad with buttons for digits 1-9, 0, and "ENT". There are also buttons for "CLR", "A / B", "Split", "A = B", "A «» B", and "M / V".

On the far right, there are four dropdown menus: "CW", "Narrow", "AGC OFF", and "ANT 1".

flrig

The screenshot displays the flrig software interface for an IC-7410 radio. The main window, titled "flrig IC-7410", features a menu bar (Files, Config, Memory, Help) and a central frequency display showing 7026.000. To the right, a secondary frequency display shows 14070.000. The interface includes various control elements: a mode selector set to AM, a mode menu (Att, Pre 2, NB, AN), and several sliders for SQL (10), Mic (0), PWR (15), and Vol (0). There are also checkboxes for IFsh, NR, Nch, and RF (100). Below the main window are two smaller windows: "flrig User Interface" and "I/O Ports".

flrig User Interface

Main Dialog Aspect Ratio (change requires restart)

- Narrow UI
- Wide UI
- Touch UI

Freq Control top/bottom left click

System

- gtk+ UI Default
- Fgnd Bngd Bgnd2
- Smeter 15
- SWR
- Pwr
- Peak
- Lt Btn Default

Font Color Back

Reset Cancel OK

I/O Ports

Primary TCP/IP PTT Aux Poll Cmds Close Init

Rig: IC-7410

Retries 2

Retry intvl 50

Cmds 20

Poll intvl 200

Byte intvl 0

Fldigi address: 127.0.0.1

Fldigi port: 7362

Ser. Port /dev/ttyUSB0

Baud: 19200

1 2 -StopBits Echo

PTT via CAT RTS/CTS

PTT via RTS RTS +12 v

PTT via DTR DTR +12 v

0x80 CI-V adr Default

USB audio key fldigi

Where to get the goodies!

- Linux distributions:
 - Ubuntu – ubuntu.com
 - Fedora – fedoraproject.org
 - Main extras repository: <http://rpmfusion.org/>
 - LXLE – <http://lxle.net/>
 - Korora - <https://kororaproject.org/>
 - Mint - <http://www.linuxmint.com/>

Questions?

Google is your friend!

Google example searches (always start with 'linux'):

- linux ham logging software
- Fedora Linux how to configure a printer in KDE

When all else fails – email me: orv.beach@gmail.com