

XSCE/IIAB on NUC Server with 3G and WiFi

Install Instructions

[Hardware Prereqs](#)

[Password Cheat Sheet & Wiring Layout](#)

[First Configure Both Routers](#)

[Set up “Upstream” 3G Router/Modem \(Netgear MBR1210\)](#)

[Set up “Downstream” WiFi AP \(TP-LINK 841N\)](#)

[Set up Server Hardware](#)

[Option 1: Rapid Blap Install \(May 2015\)](#)

[Option 1.5: Rapid Blap Install of XSCE 6.0 RC1 \(November 2015\)](#)

[Option 2: Install Server OS \(2014 Approach\)](#)

[Set up partitioning](#)

[Install Fedora 20 to the hard disk](#)

[Initial Setup and Remote access](#)

[Install Schoolserver Software](#)

[Preparation](#)

[Perform Ansible Install of XSCE](#)

[Tweak and customize the standard XSCE install](#)

[Additional Manual Configuration](#)

[Install School Server Content](#)

[Internet-in-a-Box](#)

[Additional Content for Haiti](#)

[Oh Yes, and then there is Testing](#)

[Unresolved Issues/Bugs](#)

Hardware Prereqs

- Intel i3 NUC (CPU & compact chassis) eg. D34010WYKH Kit (< \$250)
http://downloadmirror.intel.com/23090/eng/D54250WYB_D34010WYB_TechProdSpec06.pdf
- HDD (*must be 2.5-inch, 9.5mm*) eg. 1TB 5400rpm Hitachi-by-WD Hard Disk (< \$50)
[http://www.hgst.com/tech/techlib.nsf/techdocs/73F865CD81B767BA882577F9000E9B42/\\$file/Travelstar_IDK_ds.pdf](http://www.hgst.com/tech/techlib.nsf/techdocs/73F865CD81B767BA882577F9000E9B42/$file/Travelstar_IDK_ds.pdf)
- RAM eg. 8GB 1.35V Single DDR3 1600 MT/s (PC3-12800) CL11 SODIMM 204pin (< \$38)
<http://www.crucial.com/usa/en/ct102464bf160b>
- “Upstream” 3G Router eg. Netgear MBR1210, unlocked (< \$75 on eBay?)
<http://images.wirelessdealer.ca/images/phones/userguide2755.pdf>
 - USB 2.0 to 10/100 Fast Ethernet adapter/dongle eg. TRENDnet (< \$13)

- “Downstream” WiFi AP/Router eg. TP-LINK 841N (< \$20)
http://www.tp-link.com/Resources/document/TL-WR841N_V8_User_Guide.pdf

SUGGESTED FOR BOOTSTRAPPING/DIAGNOSIS: USB keyboard, USB mouse, LCD with VGA cable, and "Mini DisplayPort to VGA" short cable (< \$15)

Password Cheat Sheet & Wiring Layout

Default **usernames** and **passwords** for all 3 devices, on arrival at deployment, which will be wired together as follows: (equivalent to PAGE 2 of [visual diagram](#)!)

Netgear Router SSID: **netgear3g emergency3g** (eMERGEncy3g @ Lasca & Silar b/c abused)

192.168.0.1 or 192.168.1.1 or 10.0.0.1 ?

DON'T distribute: even staff may

abuse.

<http://routerlogin.net> admin adminXXXXkids **Kids can damage routers+XS w this password.**

|

Ethernet cable

|

USB-Ethernet dongle **The right one! MAC addr hard-coded during “./runansible” install.**

|

NUC School Server 172.18.96.1: **xsce-admin** adminXXXXkids **Password NOT for kids.**

root unleashXXXXkids

DON'T circulate red-passwords especially!

|

Ethernet cable

|

TP-LINK Router SSID: **atelye** (no password)
port!

Tape over WAN

<http://tplinklogin.net> or <http://172.18.126.101> admin adminXXXXkids **Password NOT for kids.**

First Configure Both Routers

Set up “Upstream” 3G Router/Modem (Netgear MBR1210)

(manual at <http://images.wirelessdealer.ca/images/phones/userguide2755.pdf>)

1. The easiest way is to configure the router/modem is with an XO (or other DHCP client device) connected by Ethernet wire and/or USB-Ethernet dongle, to any of the 4 LAN (yellow) ports on the Netgear modem. Or, connect over WiFi using the yellow settings printed on the bottom of the Netgear unit. If Netgear was already configured for your school server, use WiFi SSID "netgear3g" and password "emergency3g".

2. Browse to <http://routerlogin.net> or <http://routerlogin.com> (more reliable than <http://192.168.0.1>, <http://192.168.1.1> etc) entering username "admin" and password "password". Or use password "adminXXXXkids" if Netgear was already configured for your school server. If these do not work, consult with the school & Adam Holt (etc) asking if it's OK to press the red "Restore Factory Settings".
3. In Setup -> Wireless Settings, change SSID (typically looks like "BELLwxyz") to "netgear3g", Region to "United States" and Passphrase (typically looks like "12345ABCDE") to "emergency3g". Click "Apply".
4. SKIP THIS STEP UNLESS YOU KNOW YOUR 3G CARRIER REQUIRES PARTICULAR SETTINGS. If so, after powering up with SIM inserted, configure appropriately within Setup -> Mobile Broadband Settings. Generally, these will all self-populate from the SIM. But if truly nec, change Country and Internet Service Provider to "User Defined", with username <none> and password <none>. Most important, set the APN to "natcom" or "digicel.web" or "web.digicelha.com" as appropriate for your inserted SIM's account, ensuring your SIM is paid up in full, testing it first on a different smartphone or similar. Click "Apply" and continue verifying Connection Status on the bottom line, which may show "No SIM Card Detected" or "Scanning" or "Idle" or "Connected" or otherwise. (Netgear MBR1210 has been proven to work with 3G in Haiti by Kevin Groder, with both Natcom and Digicel data SIM's)
5. In Maintenance -> Set Password, change "admin" password for <http://routerlogin.net> from "password" to "adminXXXXkids", corresponding to xsce-admin's password on the Linux server itself. Click "Apply".
6. Reboot Netgear modem/router and recheck all settings above carefully!
7. To test non-3G aspects of the modem, you can temporarily use the WAN ethernet port with a live Internet cable, to be taped over later. If so, verify Broadband Settings -> Internet Connection Mode is set to "Use Ethernet connection first and if fail use mobile broadband connection". Better yet, connect the Netgear to an actual 3G service with a working/paid-in-full data SIM in your country, for complete testing if possible!

Set up "Downstream" WiFi AP (TP-LINK 841N)

(manual at http://www.tp-link.com/Resources/document/TL-WR841N_V8_User_Guide.pdf)

1. The easiest way is to configure the AP (WiFi Access Point) is with an XO (or other DHCP client device) connected by Ethernet wire and/or USB-Ethernet dongle, connected to any of the 4 LAN (yellow) ports on the TP-LINK 841N. Or, if a WiFi network appears with a name roughly like "TP-LINK-12AB", you can try the WiFi password printed on the bottom of the TP-LINK. If the TP-LINK was already configured for your school server, look for a WiFi network named "atelye" or "lekol", in which case you won't need a password.
2. Browse to <http://192.168.0.1> or <http://192.168.1.1> (supposedly <http://tplinklogin.net> is more reliably, but in fact not) using TP-LINK's out-of-the-box username "admin" and password "admin". Or if TP-LINK was already configured for your school server, use <http://172.18.126.101> with password above (default "adminXXXXkids"). If using a wire,

within your own client machine's network settings manually set IP Address to 172.18.96.100 and Subnet mask to 255.255.224.0 (both temporarily).

3. Update the 841N to the latest firmware, checking online at <http://www.tp-link.com/lk/products/details/?model=TL-WR841N>. 841N version 9.x still ships with 2013's firmware "Build 131129" as of mid-2015, so install "Build **150310**" from Mch 10 2015 or more recent.
4. In Wireless -> Wireless Settings, change "Wireless Network Name" (SSID) to "Internet in a Box", or "atelye" for Haiti computer clubs, or use "lekol" if the Haiti school strongly prefers that. Click "Save".
5. In Wireless -> Wireless Security, select "Disable Security". Click "Save".
6. In System Tools -> Time Settings, optionally fix the time and "Enable DaylightSaving" from the 2nd Sunday in March (2am) until the 1st Sunday in November (2am). Click "Save".
7. In System Tools -> Password, change username "admin" and password "admin" over to username "admin" and password "adminXXXXkids". This corresponds to xsce-admin's password on the Linux server itself. Click "Save".
8. In DHCP -> DHCP Settings, select "Disable" DHCP Server. Click "Save". It will warn you "Note: The change of DHCP config will not take effect until this device reboots!" Go on to change the LAN IP before rebooting.
9. In Network -> LAN, enter "172.18.126.101" as the "IP Address". *ALSO, in the "Subnet Mask" dropdown, select "Other Mask", then type in "255.255.224.0".* Click "Save". If you are sure all above settings have been saved correctly, click "OK" when it asks you "Modification of LAN Settings will result in the rebooting of this device, OK?"
10. Verify all the above changes have been recorded into TP-LINK 841N's persistent memory after rebooting! One way to do this is by manually setting IP Address 172.18.96.100 and Subnet mask 255.255.224.0 (both temporarily) within your own client machine's network settings. Re-establish your connection to the TP-LINK, by browsing to <http://172.18.126.101> or <http://tplinklogin.net>. Log on with username "admin" and its new password you've set above.

Set up Server Hardware

- Find a way to display output from the NUC terminal console. Several of us used \$15 adapters, that go from mini DisplayPort to 15-pin VGA. Other options require that you use the mini-HDMI connectors, if you have an adapter converting this to standard HDMI, DVI, and/or VGA. Holt discovered that a classical CRT screen was highly unreliable with a DisplayPort-to-VGA adapter cable. However connecting a generic LCD screen did the trick, finally getting the NUC to display its BIOS settings after pressing F2 on boot.
- Upgrade the NUC's BIOS. Flash to most recent version (WY0026.BIO as of early July 2014) by removing the yellow jumper on the NUC's motherboard, copying the .BIO update to a USB stick (no other files ending with ".bio"), then simply boot the NUC with the inserted USB. Obtain the .bio update from <https://downloadcenter.intel.com> by

searching downloads for "D34010WYK", selecting Download type "BIOS". (as of early July 2014, this yielded 5/14/2014's "BIOS Update [WYLPT10H.86A]", which downloaded as "WY0026.BIO"; "WY0027.BIO" as of early Aug 2014, or Sept 19th's "WY0030.BIO" is the latest as of early Nov 2014, or Apr 10th's "WY0038.BIO" as of early June 2015, June 12th's "WY0040.BIO" is the latest as of late July 2015, and finally July 20th's "WY0041.BIO" as of April 2016. Booting NUC with said file on inserted USB stick then reflashed both Main Block & Graphic firmwares. Finally restore the yellow jumper to its original position!) Aside: if your video is working, BIOS can also be upgraded using "F7" while viewing/using the prior BIOS' on-screen instructions (F2 on boot), without any need to move NUC's yellow jumper.

- Set the BIOS, by tapping F2 while booting the NUC: (Note George set the BIOS for legacy boot, then upgraded the BIOS. He discovered that the selection of legacy boot did not survive the upgrade. So do it in the right order!)
 - Boot -> Boot Priority -> UEFI Boot Priority -> UEFI Boot (uncheck to turn OFF).
 - Boot -> Boot Priority -> Legacy Boot Priority -> Legacy Boot (check to turn ON).
Optionally, individual USB's Boot Priority can be set within Boot -> Boot Priority -> Legacy Boot Priority -> Boot Drive Priority (if your USB stick is inserted, drag it to the top of the list). Also optionally, Boot -> Boot Configuration -> UEFI Boot -> Boot USB Devices First (check to turn ON). Not necessary because: USB stick will auto-boot if hard disk has no image, or use F10 if truly nec!
 - Power -> Secondary Power Setup -> After Power Failure -> Last State (or "Power On" if you prefer).
 - Save by typing F10 and then Y.
- Connect a USB-to-Ethernet dongle (adapter) from the NUC to a live Ethernet cable (with live Internet) so that during installation, software can download and update itself. *Ideally, this live Ethernet wire leads from the dongle to a LAN port in the Netgear 3G Modem/Router, whose WAN port (during this installation only!) leads to the Internet. Later you'll verify "ping 8.8.8.8" and "ping mit.edu" works thru this wire, as will be discussed below.*
- Connect an Ethernet cable and a powered TP-LINK AP (**LAN port, and tape over WAN port to make sure it's never used**) to the NUC's Ethernet port (its green link lights should show up soon, certainly once Fedora 20's LiveUSB boots).

Option 1: Rapid Blap Install (May 2015)

- Download 2.4GB XSCE 5.5 pre-release for CentOS "7.1"
http://download.unleashkids.org/xsce/downloads/installer/experimental/centos_150507.img onto a USB memory stick, verifying its MD5 checksum equals

http://download.unleashkids.org/xsce/downloads/installer/experimental/centos_150507.img.md5.txt

- Windows users can use <http://sourceforge.net/projects/win32diskimager> to accomplish both above tasks.
- Boot NUC with USB stick inserted, using F10 is necessary.
 - Type “erase” when requested
 - Watch for “done!” about 5-10 min later; ignore “I/O error”.
 - Run “reboot”
 - Optionally Disable all USB booting in BIOS: F2 on Boot -> Boot Configuration -> Boot Devices -> USB
 - Likewise this should already be disabled: Boot -> Boot Configuration -> UEFI Boot -> Boot USB Devices First
- Login to your new server as: root / centos, then change both passwords:
 - passwd (changes root password)
 - passwd xsce-admin (has sudo powers, careful!)
- Fix networking / iptables’s u3 / u4 collision etc: (arising from small problems in current image [centos_150507.img](#)...eventually this section will be automated)
 - Edit “/opt/schoolserver/xsce/vars/local_vars.yml” deleting any line containing “user_wan_iface=”
 - Ensure both your networking connections are live and connected in their final position, before running: “cd /opt/schoolserver/xsce; ./runansible” (fixes LAN; no need to “./runtags network”)
 - Test client machines can reach <http://schoolserver.lan> or <http://172.18.96.1> etc. Optionally run “systemctl status dhcpcd” to verify DHCP is active. If not, reboot. Finally, if you have no downstream WiFi AP, try <http://localhost> from a browser on the server itself, and also try <http://localhost/admin> with username “xsce-admin” and you the password you set above.
- If you want a graphical environment on your server, read <http://jensd.be/125/linux/rhel/install-mate-or-xfce-on-centos-7> or run:
 - yum groupinstall xfce (or, for solidity+features: yum groupinstall "Mate Desktop" -or- yum groupinstall "GNOME Desktop" -or-on-Fedora-22-or-higher- dnf groupinstall gnome, but first try below: dnf groupinstall "Fedora Workstation")
 - yum groupinstall "X Window System" (no ‘s’ on Window!) -or-on-Fedora-22-or-higher- dnf groupinstall "Fedora Workstation"
 - startxfce4 or better yet “systemctl isolate graphical.target” works for both; startx works for Gnome (on each boot, if you want to save memory, OR...)
 - If conversely you have sufficient memory for X to launch every time, and need it for example to run TeamViewer allowing remote access regularly, run:
 - systemctl set-default graphical.target
 - Classically the above step was done manually, using:
 - cd /etc/systemd/system
 - ln -sf /lib/systemd/system/graphical.target default.target
 - If above line fails, run “unlink default.target”, then try it again.

- Finally test your desktop manager:
 - Reboot to test graphical login, presumably with username: xsce-admin
 - Select "Use default config" NOT "One empty panel" if using xfce
- Install your favorite text editor. For example, run:
 - yum install emacs
- Install your favorite browser IF YOU UNDERSTAND ITS INHERENT RISKS TO DESTROYING YOUR SERVER. For example, run:
 - yum install firefox
- Install TeamViewer if you want VPN-style graphical access from multiple remote platforms. Download CentOS version from <http://TeamViewer.com>
 - cd ~/Downloads (or wherever you downloaded it)
 - Run as root: yum localinstall teamviewer_<VERSION-NUMBER>.i686.rpm
 - Login as xsce-admin if graphical environment auto-launches.
 - Launch TeamViewer from top-left "Applications Menu" > Internet > TeamViewer 12
 - Configure "Setup unattended access..." under TeamViewer's Connection menu If You Dare.
- Browse to <http://localhost/admin> from server or <http://schoolserver.lan/admin> from a separate client laptop ideally (associated to the WiFi AP). In either case, login as xsce-admin.
 - Click "Services Enabled" (left panel) which may show everything checked but Ajenti, if so fine for now!
 - Admin console (by Tim Moody) will increasingly enable additional configuration of content, web portal, and overall system.
 - Similarly files can be copied from large disks using (root) commands like:
 - yum install ntfs-3g; mkdir /media/ntfs; mount -t ntfs /dev/sdb1 /media/ntfs
 - rsync -av /media/usb/knowledge /library
 - OpenStreetMap can be installed using IIAB by running:
 - rsync -av /media/usb/knowledge/modules/geonames_index /library
 - rsync -av /media/usb/knowledge/modules/openstreetmap /library
 - Finally, fix OpenStreetMap search if "pip show Whoosh" shows v2.7+, then a downgrade to v2.6 is necessary:
 - pip uninstall Whoosh
 - pip install Whoosh==2.6
- Enforce regular security updates and privacy audits, working with a professional systems administrator. That might include, instead of or alongside TeamViewer:
 - OpenVPN and ssh access via George Hunt's Amazon cloud:


```
https://50.17.210.12:943/admin/current_users
```

 - /etc/crontab add:
 - "23 * * * * root /usr/bin/xs-vpn test"
 - /etc/rc.d/rc.local --
 - add "sleep 10;/usr/bin/xs-vpn test"

- copy /etc/openssl/xsce.conf.in to /etc/openssl/xsce.conf and edit:
 - remove leading # for VPNIP and VPNCONFIG
 - change VPNIP value to 5.5.0.1 and VPNCONFIG as required
- How to enable/disable/customize Internet passthrough for schools wanting limited Internet costs/digital distraction/pornography ?
- yum install which classes of CentOS “7.1” fixes on what cron or human schedules?
- Done! Get Kids & All Learning!

Option 1.5: Rapid Blap Install of XSCE 6.0 RC1 (November 2015)

- Download 1.8GB XSCE 6.0 Release Candidate 1 for CentOS “7.1 (1503):
http://download.unleashkids.org/xsce/downloads/installer/centos/centos7_xsce.6.rc1.img
 verifying its MD5 checksum equals
http://download.unleashkids.org/xsce/downloads/installer/centos/centos7_xsce.6.rc1.img.md5.txt
- dd it onto a USB stick (at the /dev/sda level -- partition table is included). This usually involves “dd if=<path>/centos7_xsce.6.rc1.img of=/dev/sdb bs=1M” (you need to verify that /dev/sdb is really the SD card).
 - Windows users can use <http://sourceforge.net/projects/win32diskimager> to accomplish the above task.
- Boot NUC with USB stick inserted, using F10 is necessary.
 - Type “erase” when requested
 - Watch for “done!” about 5-10 min later; ignore “I/O error”.
 - Run “reboot”
 - Optionally Disable all USB booting in BIOS: F2 on Boot -> Boot Configuration -> Boot Devices -> USB
 - Likewise this should already be disabled: Boot -> Boot Configuration -> UEFI Boot -> Boot USB Devices First
- Login to your new server as: root / centos, then change both passwords:
 - passwd (changes root password)
 - passwd xsce-admin (has sudo powers, careful!)
- Verify that you have internet connection with “ping yahoo.com”
- Ensure both your networking connections are live and connected in their final position.
- Get the most recent version of the XSCE playbook
 - “cd /opt/schoolserver/xsce”
 - “git pull origin master” (“release-6.0” after about Dec15 rather than “master”)
- Install the software that lets you access XSCE from a client browser
 - “./install-console” (fixes LAN; no need to “./runtags network”)
 - reboot
 - Test client machines can reach <http://schoolserver.lan> or <http://172.18.96.1> etc.
 Finally, if you have no downstream WiFi AP, try <http://localhost> from a browser on

the server itself, and also try <http://localhost/admin> with username “xsce-admin” and you the password you set above.

- Log into the command console (click on “Admin Console” link, user: xsce-admin pwd:g0adm1n)
- Select the services you want to install on the Configure--services enabled.
 - Save configuration (green button)
 - Install Configured options (red button)
 - If you want the teamviewer service, it will automatically install a graphical environment
 - Launch TeamViewer from top-left "Applications Menu" > Internet > TeamViewer 10
 - Configure “Setup unattended access...” under TeamViewer’s Connection menu If You Dare.
 - The openvpn will allow remote diagnosis and support
- Install your favorite text editor. For example, run:
 - yum install emacs/vim/or whatever

Option 2: Install Server OS (2014 Approach)

- Download the Fedora 20 operating system from [Fedora-Live-Xfce-x86_64-20-1.iso](#) (648MB). Install it to a clean USB stick using “Fedora LiveUSB Creator” from Windows (right-click “Run as administrator”) or from Linux etc if you truly know what you’re doing. EG the following 3-step sub-recipe did NOT work repeatedly using an XO-1 and XO-1.5, but perhaps someone else can figure out why:
 - From a Linux system such as an XO, verify that you know the device name of a USB memory stick that you’re willing to overwrite with this CD image -- all its data will be lost.
 - To verify you’re copying in the correct direction, try commands like “df”, “mount” and “fdisk -l” to see mounts & partition #s, and then run:
dd if=<downloaded file> of=/dev/<don’t put the wrong one here> bs=1M
 - EG when copying above file on an XO, from FAT32 USB stick mounted as /dev/sda1, to an unmounted USB stick on /dev/sdb1, one might run:
dd if=/run/media/Fedora-Live-Xfce-x86_64-20-1.iso of=/dev/sdb1 bs=1M
- Insert USB stick into the NUC, apply power, and the Xfce live desktop will appear.
- One of the options (lower left) on the desktop is install to disk. Double-click it.
- Set language/region, then timezone “Americas/New York” and optionally time/ntp/keyboard. If your networking’s already set up correctly, Network Configuration will show “Wired (enp0s20u3) connected” or similar. Don’t change Network Configuration’s Hostname. Tips are offered in italics below, if your networking isn’t yet right.
- Click “INSTALLATION DESTINATION”. You’ll be asked to select a destination disk, then click “Done”. Window “INSTALLATION OPTIONS” will appear.

Set up partitioning

1. Select "I want to review/modify my disk partitions before continuing." Partition scheme will default to LVM. Change this to "Standard Partition". Continue.
2. Do "Click here to create them automatically." Now we are going to modify the changes it made automatically, using the "MANUAL PARTITIONING" screen:
 - a. Remove the /home mountpoint, by clicking minus (-) at bottom-left.
 - b. /boot and / you can leave at 500MB and 51.2GB respectively.
 - c. Change swap size to 512MB (shrinking it from 7.952GB for Holt). Click "Update Settings".
 - d. Click the plus (+) at bottom-left, adding Mount Point "/library". Make its Desired Capacity as high as possible (1.41TB for George, 1.378584 TB for Holt; 901.65 GB on smaller 1TB Hitachi/HGST HDD) then click "Add mount point".
 - e. Play with it to use up all the space if you want, and then click "Done" at upper-left.
 - f. Click "Accept Changes" to repartition your disk.

Install Fedora 20 to the hard disk

1. Click "Begin Installation" at lower-right.
2. While it is installing, set a temporary root password to "toor" and add yourself as an administrator. Click "Done" twice. Adding a non-root user should not be necessary at this point (xsce-admin will be created later) but some consider it a precaution, if you so prefer.
3. Type "poweroff" and remove your LiveUSB.
4. Boot up, and you should now have a standard Fedora 20 running.
5. No need to create additional users so click "FINISH CONFIGURATION" to log in with the root password you created earlier.
6. At the "Panel" popup, accept "Use default config" Xfce desktop layout.
7. Enable Internet thru the dongle, verifying that "**ping 8.8.8.8**" and "**ping mit.edu**" generate responses:
 - a. Do this by right-clicking Fedora 20's tiny green network GUI in the top-right of your screen, selecting "Edit Connections...", edit dongle connection "enp0s20u3", select tab "General", enable "Automatically connect to this network when it is available", click "Save..." then "Close".
 - b. This time Left-click on the tiny green network GUI in the top-right, then clicking on "enp0s20u3" or a similar "Available" connection, to enable to dongle's connection/DHCP. Equivalent to manual commands such as "dhclient enp0s20u3" etc.
 - c. Verify live Internet is quite separate from the downstream AP (TP-LINK) connected to the NUC's Ethernet port, confirming an IP address is listed within dongle's section of "ifconfig" and a gateway to the dongle listed under "route -n".V

- d. After “./runansible” has been run (just over a page below) remember to verify IP address 172.18.96.1 appears in the “em1” Ethernet section when you run “ifconfig” (as issued by the TP-LINK 841N’s customized DHCP). Or, if Fedora 20’s network GUI in the top-right remains spinning with message “Requesting an ethernet network address for ‘em1’” when you hover over it, that is tolerable for now, but you’ll need to fix it prior to testing client XO laptops and similar.
8. Now download all Fedora 20 fixes released since the LiveCD (.iso image) was created. In a root terminal, type “**yum update**”. This will download many new updates (325+ M, confirm with ‘y’ when asked whether to download/proceed). This will take 20min, or possibly much longer downloading, “rebuilding delta” and then installing.

Initial Setup and Remote access

1. Open a Terminal, Edit menu, Preferences, Colors, and change text to black, and background to white. (George finds it very hard to read the white text on a black background).
2. Start getting access to the NUC from other places. By default, in xfce, sshd is not running:
 - a. First enable it “systemctl enable sshd.service”
 - b. Then start it “systemctl start sshd.service”
 - c. Run “ifconfig” to see what IP address the NUC is running as.
 - d. From another machine on the same sub-network try “ssh <your user name>@<ip address of NUC>”
 - e. I usually copy my public key to /root/.ssh/authorized_keys so I can easily manipulate the server from my laptop -- ssh in as root@<ip add>

Install Schoolserver Software

Preparation

1. Run “**yum install git ansible wget tar**” and accept the ~23 M download.
2. Run “cd /root”
3. Run “git clone <https://github.com/XSCE/xsce> --depth 1 -b release-5.1”
4. Run “git clone <https://github.com/UnleashKids/xsce-local> --depth 1 -b haiti” (if installing for a different deployment the ‘-b haiti’ part could be different)
5. Run “cd xsce-local”
6. Edit ansible/vars/local_vars.yml, using editor “nano” if nec:
 - a. change gw_squid_whitelist to True
 - b. change gw_block_https to True
 - c. change openvpn_enabled to True
 Save file.
 (the values above should already be there)

7. Run "scripts/cp-ans" [Nick changed this from "cp_ans"]

Perform Ansible Install of XSCE

1. Run "cd /root"
2. Run "cd xsce"
3. Ensure USB2Ethernet dongle remains in place, connected to live Internet.
4. Confirming you're still within /root/xsce, issue the command **"/runansible"**. This will install the school server on the local machine, taking about 30 min.
5. After **"/runansible"** completes, verify last output line is a summary roughly as follows:
6.
 - i. PLAY RECAP *****
 - ii. 127.0.0.1 : ok=230 changed=196 unreachable=0 failed=0
7. If you do not see that summary line, look up for red error messages, and rerun the **"/runansible"** command. SSL errors are very often fixed by re-running **"/ansible"** repeatedly. If you need to get help, the log of the install process is at /root/xsce-install.log.

Tweak and customize the standard XSCE install

1. Run "cd /root"
2. Run "cd xsce-local"
3. If necessary edit root/etc/squid/sites.whitelist.txt
4. Run "scripts/cp-root"
This copies Haiti-specific versions of a number of files to the install.
5. Set up OpenVPN for remote access if required:
 - a. Put the openvpn software key, XXXX.ovpn in the /etc/openvpn folder. The administrator of the openvpn server will provide this to you.
 - b. Copy /etc/openvpn/xsce-vpn.conf.in to /etc/openvpn/xsce-vpn.conf and edit it appropriately. For the Haiti installations, enter the correct .ovpn file and the server's IP address is 5.5.0.1
 - c. Worst case if OpenVPN fails later, the following commands can be vital in diagnosing:
 - i. "dhclient enp0s20u4" attempts to turn on DHCP for dongle, if USB dongle is connected as "enp0s20u4" (or similar name) but does not yet have an IP address and Internet connectivity from whatever live Ethernet you've physically connected.
 - ii. "/usr/bin/xs-vpn test" attempts to turn on OpenVPN, if Internet connectivity already established. This command runs on bootup, and again hourly if nec. Note it executes "ping 8.8.8.8" as its prerequisite to test for available Internet access.
 - iii. watch for "tun" connections after typing "ifconfig" to see if OpenVPN online

Additional Manual Configuration

1. Stop squid, because we want to change the size of the configured cache; run “systemctl stop squid.service”
2. Execute “squid -z -f /etc/squid/squid-xs.conf” -- which makes directories and returns, but does not give a prompt. Just hit Enter.
3. Execute “cd /root/xsce” then “./runtags vnsat” to capture network traffic, and generate summaries.
4. Reboot.
5. Check that your OpenVPN identity can be seen at:
https://50.17.210.12:943/admin/current_users

Install School Server Content

Internet-in-a-Box

1. Copy Internet-in-a-Box (IIAB) to the internal hard disk:
 - a. Insert USB connector of external hard disk providing source for IIAB
 - b. If /library does not yet contain a ‘knowledge’ subdirectory, you can generally just run: “rsync -av /media/usb/knowledge /library”.
 - i. (Whereas in the past we ran “mkdir -p /library/knowledge”;
 - ii. followed by “rsync -a <full path of knowledge>/ * /library/knowledge”)
 - c. Watch for progress over the ensuing 3-8 hours, verifying clean completion. If nec, run “df -h” to determine mount point of the external disk (probably /mnt/usb0), and “ls <mount point>” to determine the full path location of “knowledge” folder.

Additional Content for Haiti

8. Run “cd /root”
9. Run “wget <http://download.unleashkids.org/xsce/downloads/haiti-content.tar.gz>” (172 MB)
10. Run “tar -zxvf [haiti-content.tar.gz](http://download.unleashkids.org/xsce/downloads/haiti-content.tar.gz)”
11. Run “cp -R content/* /library/content”

Oh Yes, and then there is Testing

- <http://schoolserver> portal works from an attached client (implies dhcp, named, iiab, ability to associate with AP)
- search works across IIAB’s several subproperties at <http://schoolserver/iiab>
- can visit bing.com/translator
- collaboration works (chat)
- registration works
- backup works (with patched ping). For those not willing to wait for an hour, issue: “/var/bin/ds-backup.sh nosleep” (from a client will attempt backup immediately)

- squid cache growing (du -sh /library/cache)
- cannot visit porn (dansguardian)
- can visit bing.com/translator

Unresolved Issues/Bugs

1. Turn off Netgear for several seconds; when it comes back a minute later F20 (server) fails to fully recover DHCP/connectivity. Baffling since Windows and other client machines have been tested to recover DHCP/connectivity to Netgear without fail (a more complete test would be USB-to-Ethernet dongle to Netgear). Is it a timing issue with the dongle impeding reliable DHCP, perhaps repairable with a cron job kicking dhclient into gear? ***Note this entire problem does not happen when the Netgear is powered off for less than 1 second, using its own power switch!*** In any case, here are 3 variously-pathetic-but-proven workarounds, that might help crack this at a deeper level:
 - a. MANUAL WORKAROUND #1. Use Fedora 20's "alternating between spinning-green and 2-blue-computers" networking GUI in the top-right of the screen (hover over it and it almost always says **"Requesting an ethernet network address for 'enp0s20u3' ..."**) to simply click on the dropdown's "enp0s20u3" under "Ethernet Network (Zoltan Tech ZoWii)". Turns out I don't even have to "disconnect enp0s20u3" first and reconnect, as I'd been doing earlier to re-establish a proper DHCP lease. One maddening click does the job: the required IP lease then appears in "ifconfig".
 - b. MANUAL WORKAROUND #2. Unplug Ethernet between Netgear and NUC for MORE THAN 10 SECONDS (certainly does not work if you unplug for less than 5 seconds). F20 magically then reawakens, with a proper IP lease in "ifconfig". In any case, something inside F20 or its handling of the dongle is making our lives hell, causing connectivity to collapse very disruptively (OpenVPN is certainly not the cause: OpenVPN's automagically re-establishes all tun0 interfaces within 10 seconds when connectivity's restored, as seen by "route -n").
 - c. MANUAL WORKAROUND #3. Type "dhclient enp0s20u3". IP address is restored to "ifconfig" and "ping mit.edu" comes back to life just like #1 and #2 above. Maddeningly, the widget in the top-right still spins in green, claiming "Requesting an ethernet network address for 'enp0s20u3' ..." but oh well, F20's not quite a consumer market OS and consequently has GUI dongle status glitches coordinating wizard with CLI, so be it??
2. Ctrl-Alt-F2 on an XO then "ssh xsce-admin@schoolserver" then "nano filename" bureaucratizes file editing on certain school servers, at the point when you're trying to quit/save the file. We don't know what causes nano to go insist on extraneous options (at times, not other times) sewing confusion in earnest locals, needing to edit 1 critical file. These choices/toggles (DoS Format, Mac Format, Append, Prepend, Backup File, Get Help, seemingly demanding 2 very odd keystrokes) is pointlessly confounding to local empowerment. What's triggering this intermittency? Worst case, could a workaround be as simple as launching nano with a flag ("nano -N") or --noconvert or "set

noconvert" in .nanorc or SYSCONFDIR/nanorc to stop converting files from DOS/Mac format, permitting all to save ascii textfiles w/o extraneous menus? The "nano" editor does not sew confusion on XO's, and this should be the same on schoolservers. Recap: Offline new-hire implementers really do need to fix lifeline config files in an emergency, without emacs/vi and hundreds of dollars in long-distance calls costing more than the server :-)