Debian Edu / Skolelinux Stretch 9+edu0 Manual 2019-05-06

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1　Manual for Debian Edu 9+edu0 Codename Stretch

This is the manual for the Debian Edu Stretch 9+edu0 release.

The version at http://wiki.debian.org/DebianEdu/Documentation/Stretch is a wiki and updated frequently.

Translations are part of the `debian-edu-doc` package which can be installed on a webserver, and is available online.

2　About Debian Edu and Skolelinux

Debian Edu aka Skolelinux is a Linux distribution based on Debian providing an out-of-the box environment of a completely configured school network.

Directly after installation of a school server all services needed for a school network are set up (see the next chapter details of the architecture of this setup) and the system is ready to be used. Only users and machines need to be added via GOsa², a comfortable Web-UI, or any other LDAP editor. A netbooting environment using PXE has also been prepared, so after initial installation of the main server from CD, Blu-ray disc or USB flash drive all other machines can be installed via the network, this includes "roaming workstations" (ones that can be taken away from the school network, usually laptops or netbooks) as well as PXE booting for diskless machines like traditional thin clients.

Several educational applications like celestia, drgeo, gcompris, kalzium, kgeography, solfege and scratch are included in the default desktop setup, which can be extended easily and almost endlessly via the Debian universe.

2.1 Some history and why two names

Skolelinux is a Linux distribution created by the Debian Edu project. As a Debian Pure Blends distribution it is an official Debian subproject.

What this means for your school is that Skolelinux is a version of Debian providing an out-of-the box environment of a completely configured school-network.

The Skolelinux project in Norway was founded on July 2nd 2001 and about the same time Raphaël Hertzog started Debian-Edu in France. Since 2003 both projects are united, but both names stayed. "Skole" and (Debian-)"Education" are just two well understood terms in these regions.

The main target group in Norway initially were schools serving the 6-16 years age bracket. Today the system is in use in several countries around the world, with most installations in Norway, Spain, Germany and France.

3 Architecture

This section of the document describes the network architecture and services provided by a Skolelinux installation.

3.1 Network
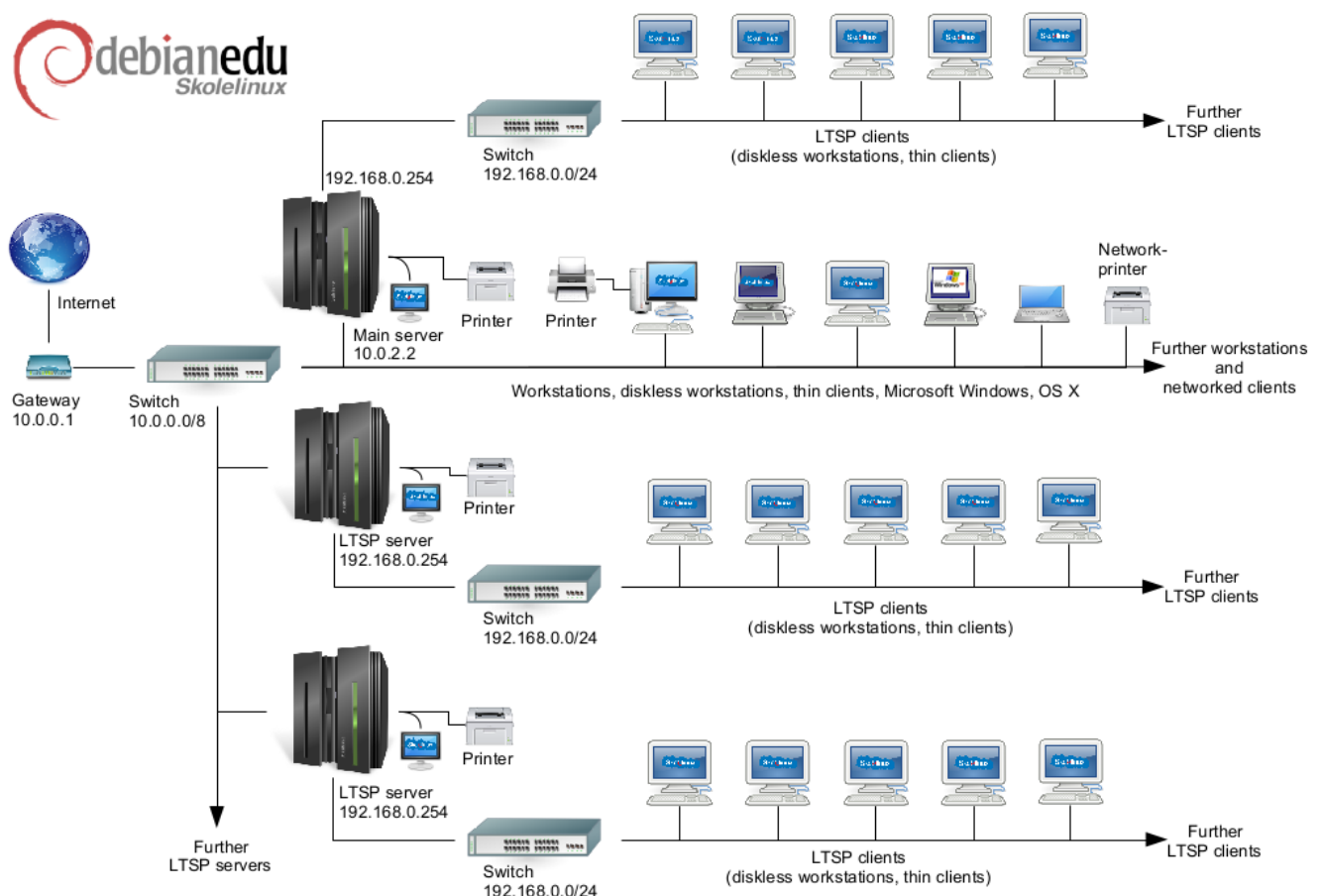
The figure is a sketch of the assumed network topology. The default setup of a Skolelinux network assumes that there is one (and only one) main server, while allowing the inclusion of both normal workstations and LTSP servers (with associated thin clients and/or diskless workstations). The number of workstations can be as large or small as you want (starting from none to a lot). The same goes for the LTSP servers, each of which is on a separate network so that the traffic between the clients and the LTSP server doesn't affect the rest of the network services.

The reason that there can only be one main server in each school network is that the main server provides DHCP, and there can be only one machine doing so in each network. It is possible to move services from the main server to other machines by setting up the service on another machine, and subsequently updating the DNS configuration, pointing the DNS alias for that service to the right computer.

In order to simplify the standard setup of Skolelinux, the Internet connection runs over a separate router. It is possible to set up Debian with both a modem and an ISDN connection; however, no attempt is made to make such a setup work out of the box for Skolelinux (the setup needed to adjust the default situation to this should be documented separately).

3.1.1 The default network setup

DHCPD on Tjener serves the 10.0.0.0/8 network, providing a syslinux menu via PXE-boot where you can choose whether to install a new server/workstation, boot a thin client or a diskless workstation, run memtest, or boot from the local hard disk.

This is designed to be modified - that is, you can have the NFS-root in syslinux pointing to one of the LTSP servers or change the DHCP next-server option (stored in LDAP) to have clients directly boot via PXE from the terminal server.

DHCPD on the LTSP servers only serves a dedicated network on the second interface (192.168.0.0/24 and 192.168.1.0/24 are preconfigured options) and should seldom need to be changed.

The configuration of all subnets is stored in LDAP.

3.1.2 Main server (tjener)

A Skolelinux network needs one main server (also called "tjener" which is Norwegian and means "server") which per default has the IP address 10.0.2.2 and is installed by selecting the Main Server profile. It's possible (but not required) to also select and install the LTSP Server and Workstation profiles in addition to the Main Server profile.

3.1.3 Services running on the main server

With the exception of the control of the thin clients, all services are initially set up on one central computer (the main server). For performance reasons, the LTSP server(s) should be separate (though it is possible to install both the Main Server and LTSP Server profiles on the same machine). All services are allocated a dedicated DNS-name and are offered exclusively over IPv4. The allocated DNS name makes it easy to move individual services from the main server to a different machine, by simply stopping the service on the main server, and changing the DNS configuration to point to the new location of the service (which should be set up on that machine first, of course).

To ensure security all connections where passwords are transmitted over the network are encrypted, so no passwords are sent over the network as plain text.

Below is a table of the services that are set up by default in a Skolelinux network and the DNS name of each service. If possible all configuration files will refer to the service by name (without the domain name) thus making it easy for schools to change either their domain (if they have an own DNS domain) or the IP addresses they use.

Table of services		
Service description	**Common name**	**DNS service name**
Centralised Logging	rsyslog	syslog
Domain Name Service	DNS (BIND)	domain
Automatic Network Configuration of Machines	DHCP	bootps
Clock Synchronisation	NTP	ntp
Home Directories via Network File System	SMB / NFS	homes

Electronic Post Office	IMAP (Dovecot)	postoffice
Directory Service	OpenLDAP	ldap
User Administration	GOsa^2	---
Web Server	Apache/PHP	www
Central Backup	sl-backup, slbackup-php	backup
Web Cache	Proxy (Squid)	webcache
Printing	CUPS	ipp
Secure Remote Login	OpenSSH	ssh
Automatic Configuration	Cfengine	cfengine
LTSP Server/s	LTSP	ltsp
Network Block Device Server	NBD	---
Machine and Service Surveillance with Error Reporting, plus Status and History on the Web. Error Reporting by email	Munin, Icinga and Sitesummary	sitesummary

Personal files for each user are stored in their home directories, which are made available by the server. Home directories are accessible from all machines, giving users access to the same files regardless of which machine they are using. The server is operating system agnostic, offering access via NFS for Unix clients, SMB for Windows and Macintosh clients.

By default email is set up for local delivery (i.e. within the school) only, though email delivery to the wider Internet may be set up if the school has a permanent Internet connection. Clients are set up to deliver mail to the server (using 'smarthost'), and users can access their personal mail through IMAP.

All services are accessible using the same username and password, thanks to the central user database for authentication and authorisation.

To increase performance on frequently accessed sites a web proxy that caches files locally (Squid) is used. In conjunction with blocking web-traffic in the router this also enables control of Internet access on individual machines.

Network configuration on the clients is done automatically using DHCP. All types of clients can be connected to the private 10.0.0.0/8 subnet and will get according IP addresses; LTSP clients should be connected to the corresponding LTSP server via the separate subnet 192.168.0.0/24 (this is to ensure that the network traffic of the LTSP clients doesn't interfere with the rest of the network services).

Centralised logging is set up so that all machines send their syslog messages to the server. The syslog service is set up so that it only accepts incoming messages from the local network.

By default the DNS server is set up with a domain for internal use only (*.intern), until a real ("external") DNS domain can be set up. The DNS server is set up as caching DNS server so that all machines on the network can use it as the main DNS Server.

Pupils and teachers have the ability to publish websites. The web server provides mechanisms for authenticating users, and for limiting access to individual pages and subdirectories to certain users and groups. Users will have the ability to create dynamic web pages, as the web server will be programmable on the server side.

Information on users and machines can be changed in one central location, and is made accessible to all computers on the network automatically. To achieve this a centralised directory server is set up. The directory will have information on users,

user groups, machines, and groups of machines. To avoid user confusion there won't be any difference between file groups, mailing lists, and network groups. This implies that groups of machines which are to form network groups will use the same namespace as user groups and mailing lists.

Administration of services and users will mainly be via the web, and follow established standards, functioning well in the web browsers which are part of Skolelinux. The delegation of certain tasks to individual users or user groups will be made possible by the administration systems.

In order to avoid certain problems with NFS, and to make it simpler to debug problems, the different machines need synchronised clocks. To achieve this the Skolelinux server is set up as a local Network Time Protocol (NTP) server, and all workstations and clients are set up to synchronise with the server. The server itself should synchronise its clock via NTP against machines on the Internet, thus ensuring the whole network has the correct time.

Printers are connected where convenient, either directly onto the main network, or connected to a server, workstation or LTSP server. Access to printers can be controlled for individual users according to the groups they belong to; this will be achieved by using quota and access control for printers.

3.1.4   LTSP server(s)

A Skolelinux network can have many LTSP servers (which we called "thin client servers" in releases before Stretch), which are installed by selecting the LTSP Server profile.

The LTSP servers are set up to receive syslog from thin clients and workstations, and forward these messages to the central syslog recipient.

Please note: Thin clients are using the programs installed on the server. Diskless workstations are using the programs installed in the server's LTSP chroot, the client root filesystem is provided using NBD (Network Block Device). After each modification to the LTSP chroot the related NBD image has to be re-generated; run `ltsp-update-image` on the LTSP server.

3.1.5   Thin clients

A thin client setup enables ordinary PCs to function as (X-)terminals. This means that the machine boots from a diskette or directly from the server using network-PROM (or PXE) without using the local client hard drive. The thin client setup used is that of the Linux Terminal Server Project (LTSP).

Thin clients are a good way to make use of older, weaker machines as they effectively run all programs on the LTSP server. This works as follows: the service uses DHCP and TFTP to connect to the network and boot from the network. Next, the file system is mounted from the LTSP server using NBD, and finally the X Window System is started. The display manager (LDM) connects to the LTSP server via SSH with X-forwarding. This way all data is encrypted on the network. For very old thin clients which are too slow for the encryption this can be set to the behavior from former versions, which is to use a direct X connection via XDMCP.

3.1.6   Diskless workstations

For diskless workstations the terms "stateless workstations", "lowfat clients" or "half-thick clients" are also used. For the sake of clarity this manual sticks to the term "diskless workstations".

A diskless workstation runs all software on the PC without a locally installed operating system. This means that client machines boot directly from the server's hard drive without running software installed on a local hard drive.

Diskless workstations are an excellent way of reusing older (but powerful) hardware with the same low maintenance cost as with thin clients. Software is administered and maintained on the server with no need for local installed software on the clients. Home directories and system settings are stored on the server too.

Diskless workstations were introduced as part of the Linux Terminal Server Project (LTSP) with version 5.0.

3.1.7   Networked clients

The term "networked clients" is used in this manual to refer to both thin clients and diskless workstations, as well as computers running Mac OS or Windows.

3.2   Administration

All the Linux machines that are installed with the Skolelinux installer will be administrable from a central computer, most likely the server. It will be possible to log in to all machines via SSH (by default, root is not allowed to log in with password), and thereby have full access to the machines.

All user information is kept in an LDAP directory. Updates of user accounts are made against this database, which is used by the clients for user authentication.

3.2.1   Installation

Currently there are two kinds of installation media images: netinstall (CD) and multi-arch USB flash drive. Both images can also be booted from USB sticks.

The aim is to be able to install a server from any type of medium once, and install all other clients over the network by booting from the network.

Only the netinstall image needs access to the Internet during installation.

The installation should not ask any questions, with the exception of desired language (e.g. Norwegian Bokmål, Nynorsk, Sami) and machine profile (main server, workstation, LTSP server, ...). All other configuration will be set up automatically with reasonable values, to be changed from a central location by the system administrator subsequent to the installation.

3.2.2   File system access configuration

Each Skolelinux user account is assigned a section of the file system on the file server. This section (home directory) contains the user's configuration files, documents, email and web pages. Some of the files should be set to have read access for other users on the system, some should be readable by everyone on the Internet, and some should not be accessible for reading by anyone but the user.

To ensure that all disks that are used for user directories or shared directories can be uniquely named across all the computers in the installation, they can be mounted as /skole/host/directory/. Initially, one directory is created on the file server, /skole/tjener/home0/, in which all the user accounts are created. More directories may then be created when needed to accommodate particular user groups or particular patterns of usage.

To enable shared access to files under the normal UNIX permissions system, users need to be in supplementary shared groups (such as "students") as well as the personal primary group that they're in by default. If users have an appropriate umask to make newly created items group-accessible (002 or 007), and if the directories they're working in are setgid to ensure the files inherit the correct group-ownership, the result is controlled file sharing between the members of a group.

The initial access settings for newly created files are a matter of policy. The Debian default umask is 022 (which would not allow group-access as described above), but Debian Edu uses a default of 002 - meaning that files are created with read access for everybody, which can later be removed by explicit user action. This can alternatively be changed (by editing /etc/pam.d/common-session) to a umask of 007 - meaning read access is initially blocked, necessitating user action to make them accessible. The first approach encourages knowledge sharing, and makes the system more transparent, whereas the second method decreases the risk of unwanted spreading of sensitive information. The problem with the first solution is that it is not apparent to the users that the material they create will be accessible to all other users. They can only detect this by inspecting other users' directories and seeing that their files are readable. The problem with the second solution is that few people are likely to make their files accessible, even if they do not contain sensitive information and the content would be helpful to inquisitive users who want to learn how others have solved particular problems (typically configuration issues).

4   Requirements

There are different ways of setting up a Skolelinux solution. It can be installed on just one standalone PC, or as a region-wide solution at many schools operated centrally. This flexibility makes a huge difference to the configuration of network components, servers and client machines.

4.1 Hardware requirements

The purpose of the different profiles is explained in the network architecture chapter.

If LTSP is intended to be used, take a look at the LTSP Hardware Requirements wiki page.

- The computers running Debian Edu / Skolelinux must have either 32 bit (Debian architecture 'i386', oldest supported processors are 686 class ones) or 64 bit (Debian architecture 'amd64') x86 processors.

- At least 12 GiB RAM for 30 thin clients and 20 GiB RAM for 50-60 thin clients are recommended for the main and LTSP server profiles.

- Thin clients with only 256 MiB RAM and 400 MHz are possible, though more RAM and faster processors are recommended.

  - Swapping over the network is automatically enabled for LTSP clients; the swap size is 512 MiB, and if you need more you can tune this by editing `/etc/ltsp/nbdswapd.conf` on tjener to set the SIZE variable.
  - If your diskless workstations have hard drives, it is recommended to use them for swap as it is a lot faster than network swapping.

- For workstations, diskless workstations and standalone systems, 1000 MHz and 512 MiB RAM are the absolute minimum requirements. For running modern webbrowsers and LibreOffice at least 1024 MiB RAM is recommended.

  - On workstations with little RAM the spell checker might cause LibreOffice to hang if the swap space is also too small. If this happens frequently the spell checker can be disabled by system administrators.

- The minimum disk space requirements depend on the profile which is installed:

  - combined main server + LTSP server: 70 GiB. As usual with disk space on a main server, "the bigger the better".
  - LTSP server: 50 GiB.
  - workstation or standalone: 30 GiB.

- LTSP servers need two network cards when using the default network architecture:

  - eth0 is connected to the main network (10.0.0.0/8),
  - eth1 is used for serving LTSP clients (192.168.0.0/24 as default), but others are possible.

- Laptops are movable workstations, so they have the same requirements as workstations.

4.2 Hardware known to work

A list of tested hardware is provided at `http://wiki.debian.org/DebianEdu/Hardware/` . This list is not nearly complete 😐

`http://wiki.debian.org/InstallingDebianOn` is an effort to document how to install, configure and use Debian on some specific hardware, allowing potential buyers to know if that hardware is supported and existing owners to know how get the best out of that hardware.

An excellent database of hardware supported by Debian is online at `http://kmuto.jp/debian/hcl/`.

5 Requirements for network setup

5.1 Default Setup

When using the default network architecture, these rules apply:

- You need exactly one main server, the tjener.

- You can have hundreds of workstations on the main network.

- You can have a lot of LTSP servers on the main network; two different subnets are preconfigured (DNS, DHCP) in LDAP, more could be added.

- You can have hundreds of thin clients and/or diskless workstations on each LTSP server network.

- You can have hundreds of other machines which will have dynamic IP addresses assigned.

- For access to the Internet you need a router/gateway (see below).

5.2 Internet router

A router/gateway, connected to the Internet on the external interface and running on the IP address 10.0.0.1 with netmask 255.0.0.0 on the internal interface, is needed to connect to the Internet.

The router should not run a DHCP server, it can run a DNS server, though this is not needed and will not be used.

In case you already have a router but are unable to configure it like needed (not allowed to, technical reasons), a system with two network interfaces could be turned into a gateway if the Debian Edu 'Minimal' profile is installed.

After the installation:

- Adjust the /etc/network/interfaces file.

- Change the hostname permanently to 'gateway'.

- Enable IP forwarding and NAT for the 10.0.0.0/8 network.

- As an option install a firewall and / or a traffic shaping tool.

```
#!/bin/sh
# Turn a system with profile 'Minimal' into a gateway/firewall.
#
sed -i 's/auto eth0/auto eth0 eth1/' /etc/network/interfaces
sed -i '/eth1/ s/dhcp/static/' /etc/network/interfaces
echo 'address 10.0.0.1' >> /etc/network/interfaces
echo 'netmask 255.0.0.0' >> /etc/network/interfaces
hostname -b gateway
hostname > /etc/hostname
service networking stop
service networking start
sed -i 's#NAT=#NAT="10.0.0.0/8"#' /etc/default/enable-nat
service enable-nat restart
# You might want a firewall (shorewall or ufw) and traffic shaping.
#apt update
#apt install shorewall
# or
#apt install ufw
#apt install wondershaper
```

If you need something for an embedded router or accesspoint we recommend using OpenWRT, though of course you can also use the original firmware. Using the original firmware is easier; using OpenWRT gives you more choices and control. Check the OpenWRT webpages for a list of supported hardware.

It is possible to use a different network setup (there is a documented procedure to do this), but if you are not forced to do this by an existing network infrastructure, we recommend against doing so and recommend you stay with the default network architecture.

6 Installation and download options

6.1 Where to find additional information

We recommend that you read or at least take a look at the release notes for Debian Stretch before you start installing a system for production use. Please give Debian Edu/Skolelinux a try, it should just work. 🙂

⚠ Be sure to read the getting started chapter of this manual, though, as it explains how to log in for the first time.

Even more information about the Debian Stretch release is available in its installation manual.

6.2 Download the installation media for Debian Edu 9+edu0 Codename Stretch

6.2.1 netinstall CD image for i386, amd64

The netinstall CD, which also can be used for installation from USB flash drives, is suitable to install i386 and amd64 machines. As the name implies, internet access is required for the installation. It's available via

- debian-edu-9+edu0-CD.iso

  ```
  rsync -v --progress ftp.skolelinux.org::skolelinux-cd/debian-edu-9+edu0-CD.iso ./debian-edu-9+edu0-CD
  ```

6.2.2 USB drive ISO image for i386 and amd64

The multi-architecture ISO image is 5.5 GiB large and can be used for installation of amd64 and i386 machines. Like the netinstall image it can be installed on USB flash drives or disk media of sufficient size. Please note that internet access is needed during installation if the 'LTSP Server' profile is chosen. Like the others it can be downloaded over HTTP or rsync via:

- debian-edu-9+edu0-USB.iso

  ```
  rsync -v --progress ftp.skolelinux.org::skolelinux-cd/debian-edu-9+edu0-USB.iso ./debian-edu-9+edu0-U
  ```

6.2.3 Sources

Sources are available from the Debian archive at the usual locations.

6.3 Request a CD / DVD by mail

For those without a fast Internet connection, we can offer a CD or DVD sent for the cost of the CD or DVD and shipping. Just send an email to cd@skolelinux.no and we will discuss the payment details (for shipping and media). 🙂 Remember to include the address you want the CD or DVD to be sent to in the email.

6.4   Installing Debian Edu

When you do a Debian Edu installation, you have a few options to choose from. Don't be afraid; there aren't many. We have done a good job of hiding the complexity of Debian during the installation and beyond. However, Debian Edu is Debian, and if you want there are more than 52,000 packages to choose from and a billion configuration options. For the majority of our users, our defaults should be fine.

6.4.1   Installation types and options

Installer boot menu on 64-bit Hardware
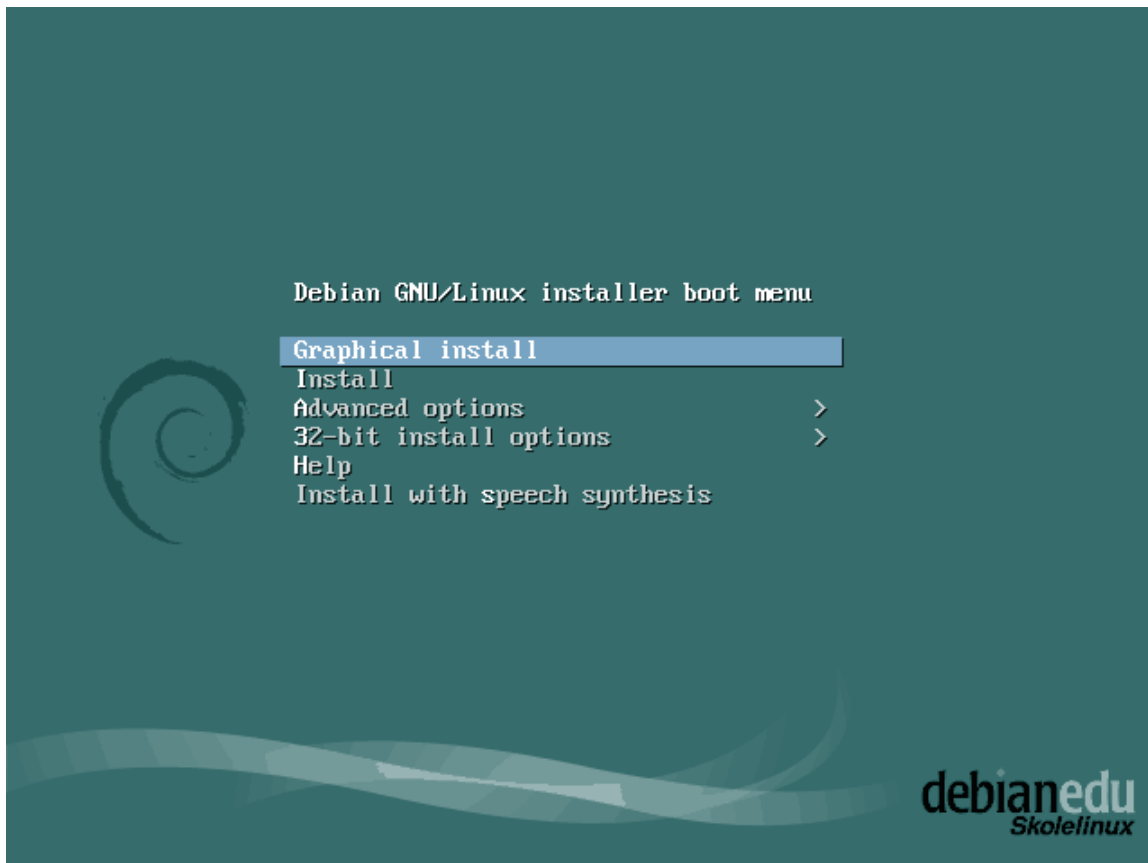
Graphical install uses the GTK installer where you can use the mouse.

Install uses text mode.

Advanced options > gives a sub menu with more detailed options to choose.

32-bit install options > allows a 32-bit installation on 64-bit hardware.

Help gives some hints on using the installer; see screenshot below.

Back.. brings back to the main menu.

Graphical expert install gives access to all available questions, mouse usable.

Graphical rescue mode makes this install medium become a rescue disk for emergency tasks.

Graphical automated install needs a preseed file.

Expert install gives access to all available questions in text mode.

Rescue mode text mode; makes this install medium become a rescue disk for emergency tasks.

Automated install text mode; needs a preseed file.

Installer boot menu on 32-bit Hardware

Explanations are similar to those for 64-bit hardware.

Help screen
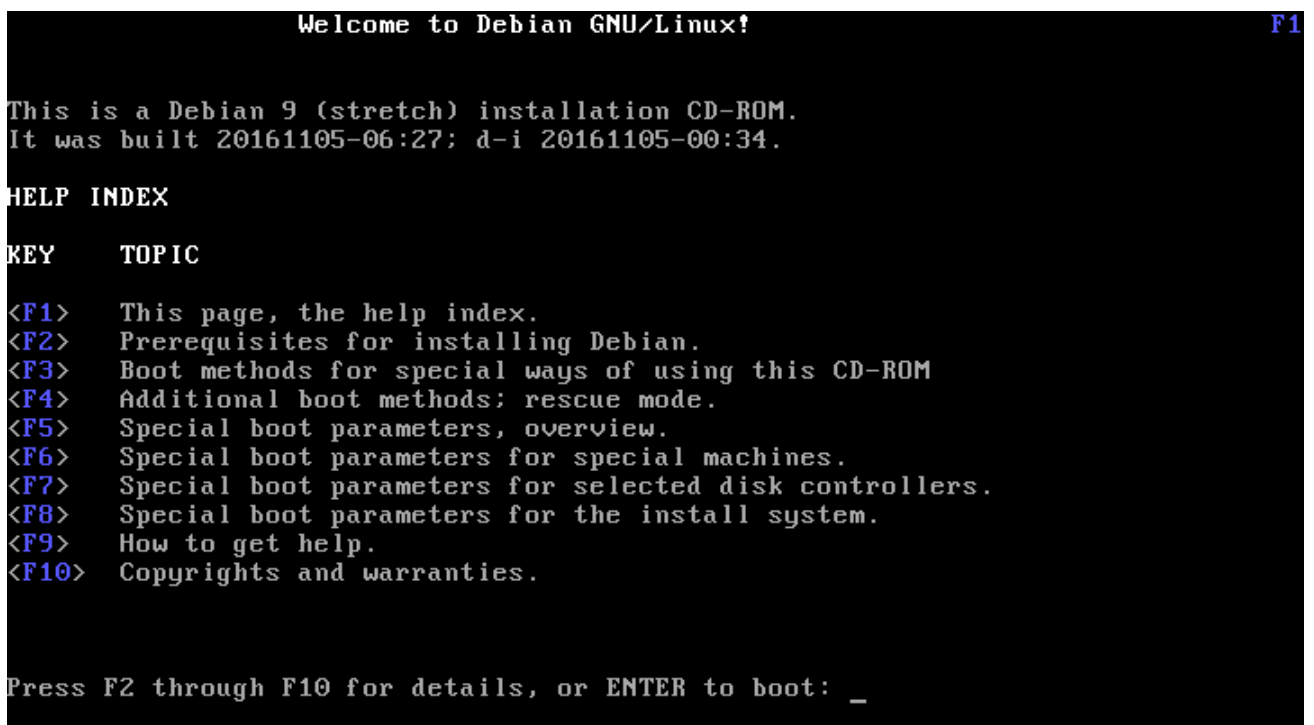
This Help screen is self explaining and enables the <F>-keys on the keyboard for getting more detailed help on the topics described.

Add or change boot parameters for installations

In both cases, boot options can be edited by pressing the TAB key in the boot menu; the screenshot shows the command line for **Graphical install**.
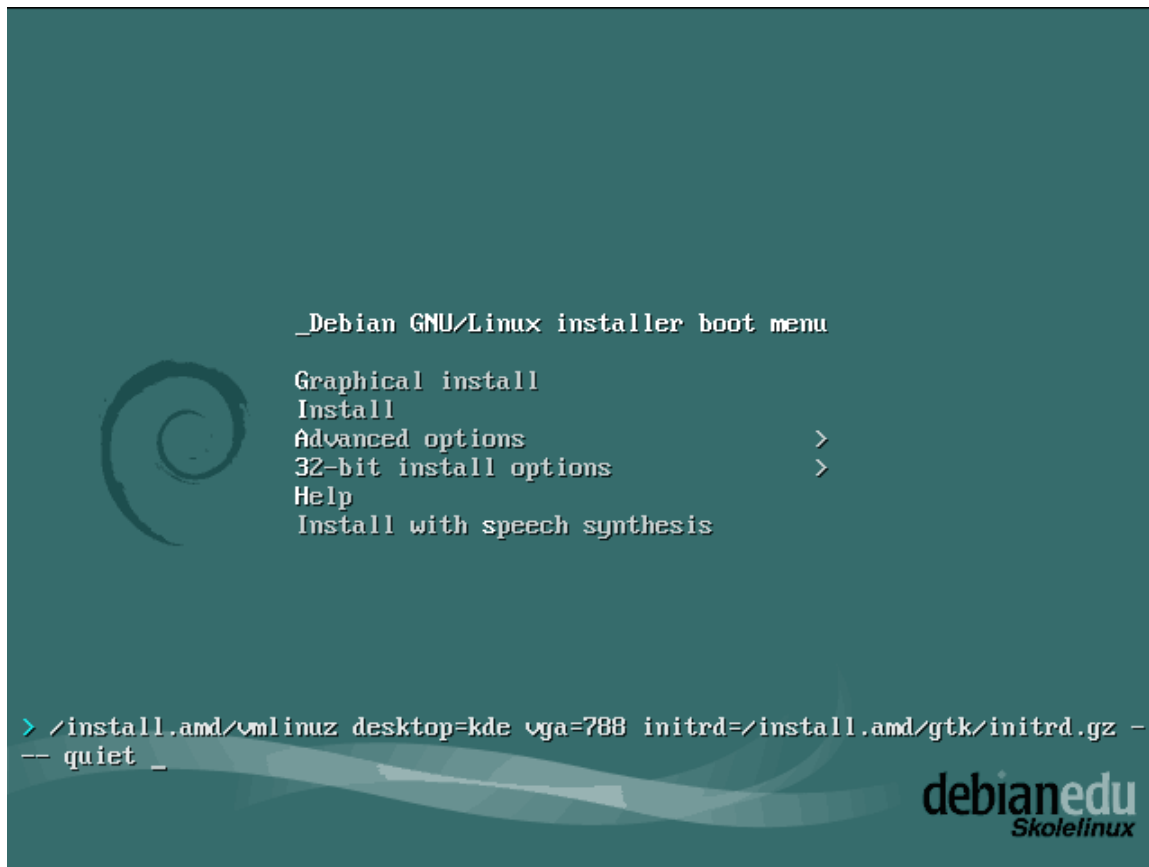
- You can use an existing HTTP proxy service on the network to speed up the installation of the main server profile from CD. Add `mirror/http/proxy=http://10.0.2.2:3128/` as an additional boot parameter.

- If you have already installed the main server profile on a machine, further installations should be done via PXE, as this will automatically use the proxy of the main server.

- To install the **GNOME** desktop instead of the default **KDE Plasma** desktop, replace kde with gnome in the `desktop=kde` parameter.

- To install the **LXDE** desktop instead, use `desktop=lxde`. (Recommended if LTSP is intended to be used.)

- To install the **Xfce** desktop instead, use `desktop=xfce`.

- And to install the **MATE** desktop instead, use `desktop=mate`.

6.4.2   The installation process

Remember the system requirements and make sure you have at least two network cards (NICs) if you plan on setting up an LTSP server.

- Choose a language (for the installation and the installed system).

- Choose a location which normally should be the location where you live.

- Choose a keyboard keymap (the country's default is usually fine).

- Choose profile(s) from the following list:

- **Main Server**
  * This is the main server (tjener) for your school providing all services pre-configured to work out of the box. You must install only one main server per school! This profile does not include a graphical user interface. If you want a graphical user interface, then select Workstation or LTSP Server in addition to this one.
- **Workstation**
  * A computer booting from its local hard drive, and running all software and devices locally like an ordinary computer, except that user logins are authenticated by the main server, where the users' files and desktop profile are stored.
- **Roaming workstation**
  * Same as workstation but capable of authentication using cached credentials, meaning it can be used outside the school network. The users' files and profiles are stored on the local disk. For single user notebooks and laptops this profile should be selected and not 'Workstation' or 'Standalone' as suggested in earlier releases.
- **LTSP Server**
  * A thin client (and diskless workstation) server, is called an LTSP server. Clients without hard drives boot and run software from this server. This computer needs two network interfaces, a lot of memory, and ideally more than one processor or core. See the chapter about networked clients for more information on this subject. Choosing this profile also enables the workstation profile (even if it is not selected) - an LTSP server can always be used as a workstation, too.
- **Standalone**
  * An ordinary computer that can function without a main server (that is, it doesn't need to be on the network). Includes laptops.
- **Minimal**
  * This profile will install the base packages and configure the machine to integrate into the Debian Edu network, but without any services and applications. It is useful as a platform for single services manually moved out from the main-server.

The **Main Server**, **Workstation** and **LTSP Server** profiles are preselected. These profiles can be installed on one machine together if you want to install a so called *combined main server*. This means the main server will be an LTSP server and also be used as a workstation. This is the default choice, since we assume most people will install via PXE afterwards. Please note that you must have 2 network cards installed in a machine which is going to be installed as a combined main server or as an LTSP server to become useful after the installation.

- Say "yes" or "no" to automatic partitioning. Be aware that saying "yes" will destroy all data on the hard drives! Saying "no" on the other hand will require more work - you will need to make sure that the required partitions are created and are big enough.

- Please say "yes" to submitting information to http://popcon.skolelinux.org/ to allow us to know which packages are popular and should be kept for future releases. Although you don't have to, it is a simple way for you to help. 🙂

- Wait. If the selected profiles include LTSP Server then the installer will spend quite some time at the end, "Finishing the installation - Running debian-edu-profile-udeb..."

- After giving the root password, you will be asked to create a normal user account "for non-administrative tasks". For Debian Edu this account is very important: it is the account you will use to manage the Skolelinux network.

  ⚠️ The password for this user **must** have a length of **at least 5 characters** - otherwise login will not be possible (even though a shorter password will be accepted by the installer).

- Be happy

6.4.3   Notes on some characteristics

6.4.3.1   A note on notebooks

Most likely you will want to use the 'Roaming workstation' profile (see above). Be aware that all data is stored locally (so take some extra care over backups) and login credentials are cached (so after a password change, logins may require your old password if you have not connected your laptop to the network and logged in with the new password).

6.4.3.2 A note on multi-arch USB flash drive / Blu-ray disc image installs

After you install from the multi-arch USB flash drive / Blu-ray disc image, `/etc/apt/sources.list` will only contain sources from that image. If you have an Internet connection, we strongly suggest adding the following lines to it so that available security updates can be installed:

```
deb http://ftp.debian.org/debian/ stretch main
deb http://security.debian.org/ stretch/updates main
```

6.4.3.3 A note on CD installs

A netinst installation (which is the type of installation our CD provides) will fetch some packages from the CD and the rest from the net. The amount of packages fetched from the net varies from profile to profile but stays below a gigabyte (unless you choose to install all possible desktops). Once you have installed the main-server (whether a pure main-server or combi-server does not matter), further installation will use its proxy to avoid downloading the same package several times from the net.

6.4.3.4 Notes on LTSP Server installations using only Thin-Clients

Providing the kernel boot parameter `edu-skip-ltsp-make-client` makes it possible to skip one step which converts the LTSP chroot from a thin-client chroot into a combined thin-client/diskless workstation chroot.

This is useful in certain situations, such as if you want a pure thin client chroot or if there is already a diskless chroot on another server, which can be rsynced. For these situations skipping this step will cut down the installation time considerably.

Except for the longer installation time there is no harm in always creating combined chroots, which is why this is done by default.

6.4.4 Installation using USB flash drives instead of CD / Blu-ray discs

Since the Squeeze release it is possible to directly copy the CD/DVD/BD `.iso` images to a USB flash drive (also known as "USB sticks") and boot from them. Simply execute a command like this, just adapting the file and device names to your needs:

```
sudo dd if=debian-edu-amd64-i386-XXX.iso of=/dev/sdX bs=1024
```

Depending on which image you choose, the USB flash drive will behave just like a CD or Blu-ray disc.

6.4.5 Installation over the network (PXE) and booting diskless clients

For this installation method it is required that you have a running main server. When clients boot via the main network, a new PXE menu with installer and boot selection options is displayed. If PXE installation fails with an error message claiming a XXX.bin file is missing, then most probably the client's network card requires nonfree firmware. In this case the Debian Installer's initrd must be modified. This can be achieved by executing the command: `/usr/share/debian-edu-config/tools/pxe-` on the server.

This is how the PXE menu looks with the **Main-Server** profile only:

This is how the PXE menu looks with the **Main Server** and **LTSP Server** profiles:

To install a desktop environment of your choice instead of the default one, press TAB and edit the kernel boot options (like explained above).

This setup also allows diskless workstations and thin clients to be booted on the main network. Unlike workstations, diskless workstations don't have to be added to LDAP with GOsa², but can be, for example if you want to force the hostname.

More information about network clients can be found in the Network clients HowTo chapter.

6.4.5.1 Modifying PXE installations

The PXE installation uses a debian-installer preseed file, which can be modified to ask for more packages to install.

A line like the following needs to be added to `tjener:/etc/debian-edu/www/debian-edu-install.dat`

```
d-i    pkgsel/include string my-extra-package(s)
```

The PXE installation uses `/var/lib/tftpboot/debian-edu/install.cfg` and the preseeding file in `/etc/debian-edu/www/deb` These files can be changed to adjust the preseeding used during installation, to avoid more questions when installing over the net. Another way to achieve this is to provide extra settings in `/etc/debian-edu/pxeinstall.conf` and `/etc/debian-edu/www/debian-edu-install.dat.local` and to run `/usr/sbin/debian-edu-pxeinstall` to update the generated files.

Further information can be found in the manual of the Debian Installer.

To disable or change the use of the proxy when installing via PXE, the lines containing `mirror/http/proxy`, `mirror/ftp/proxy` and `preseed/early_command` in `tjener:/etc/debian-edu/www/debian-edu-install.dat` need to be changed. To disable the use of a proxy when installing, put '#' in front of the first two lines, and remove the "`export http_proxy="http://web`" part from the last one.

Some settings can not be preseeded because they are needed before the preseeding file is downloaded. These are configured in the PXElinux-based boot arguments available from `/var/lib/tftproot/debian-edu/install.cfg`. Language, keyboard layout and desktop are examples of such settings.

6.4.6 Custom images

Creating custom CDs, DVDs or Blu-ray discs can be quite easy since we use the Debian Installer, which has a modular design and other nice features. Preseeding allows you to define answers to the questions normally asked.

So all you need to do is to create a preseeding file with your answers (this is described in the appendix of the Debian Installer manual) and remaster the CD/DVD.

6.5 Screenshot tour

The text mode and the graphical installation are functionally identical - only the appearance is different. The graphical mode offers the opportunity to use a mouse, and of course looks much nicer and more modern. Unless the hardware has trouble with the graphical mode, there is no reason not to use it.

So here is a screenshot tour through a graphical 64-bit Main Server + Workstation + LTSP Server installation and how it looks at the first boot of the main server, a PXE boot on the workstation network and on the LTSP client network:
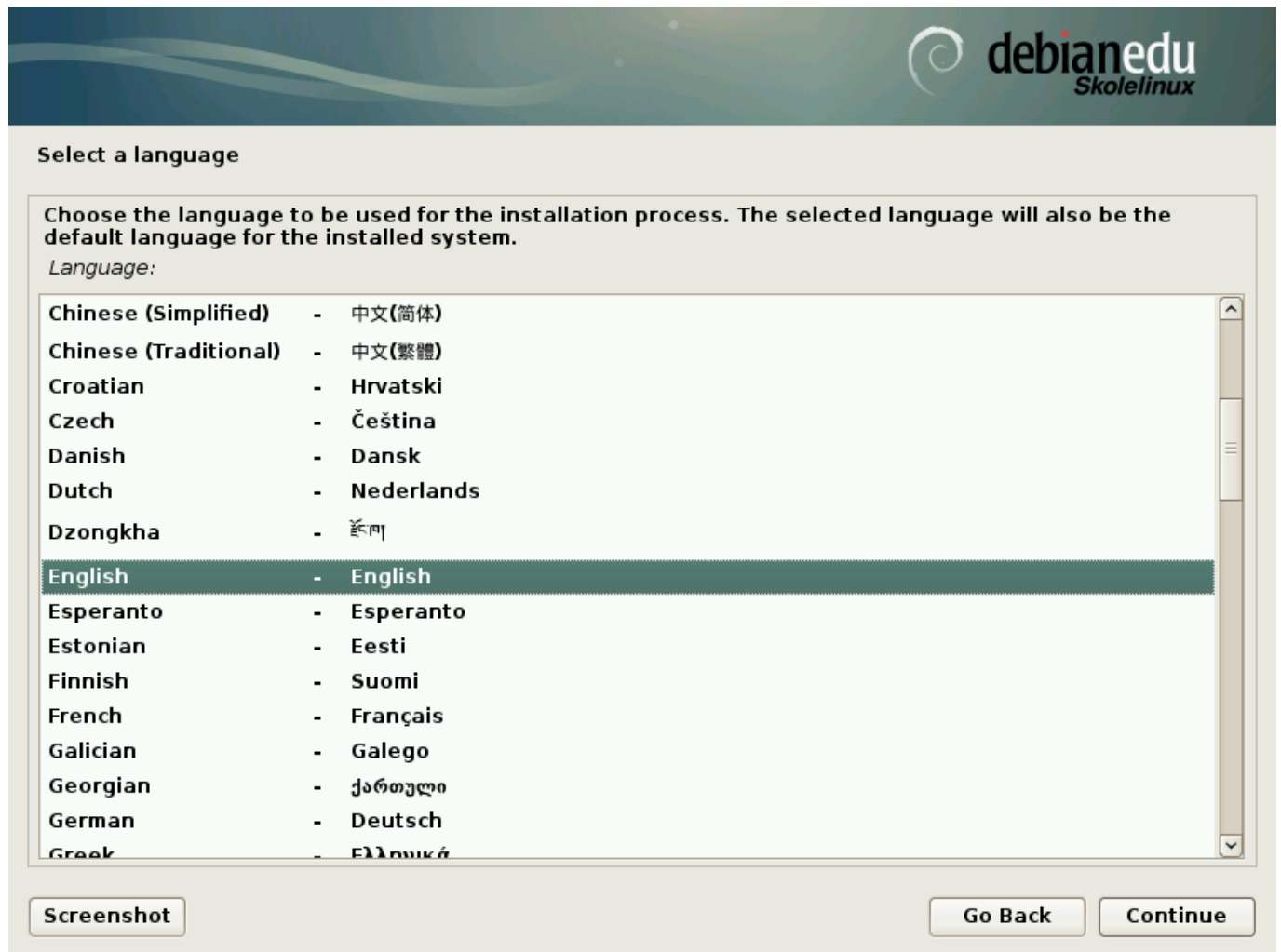
Detect and mount CD-ROM

Detecting hardware to find CD-ROM drives

Loading module 'usb-storage' for 'USB storage'...

Load installer components from CD

Loading additional components

Retrieving partman-auto-raid

Detect network hardware

Detecting network hardware

Detecting hardware, please wait...
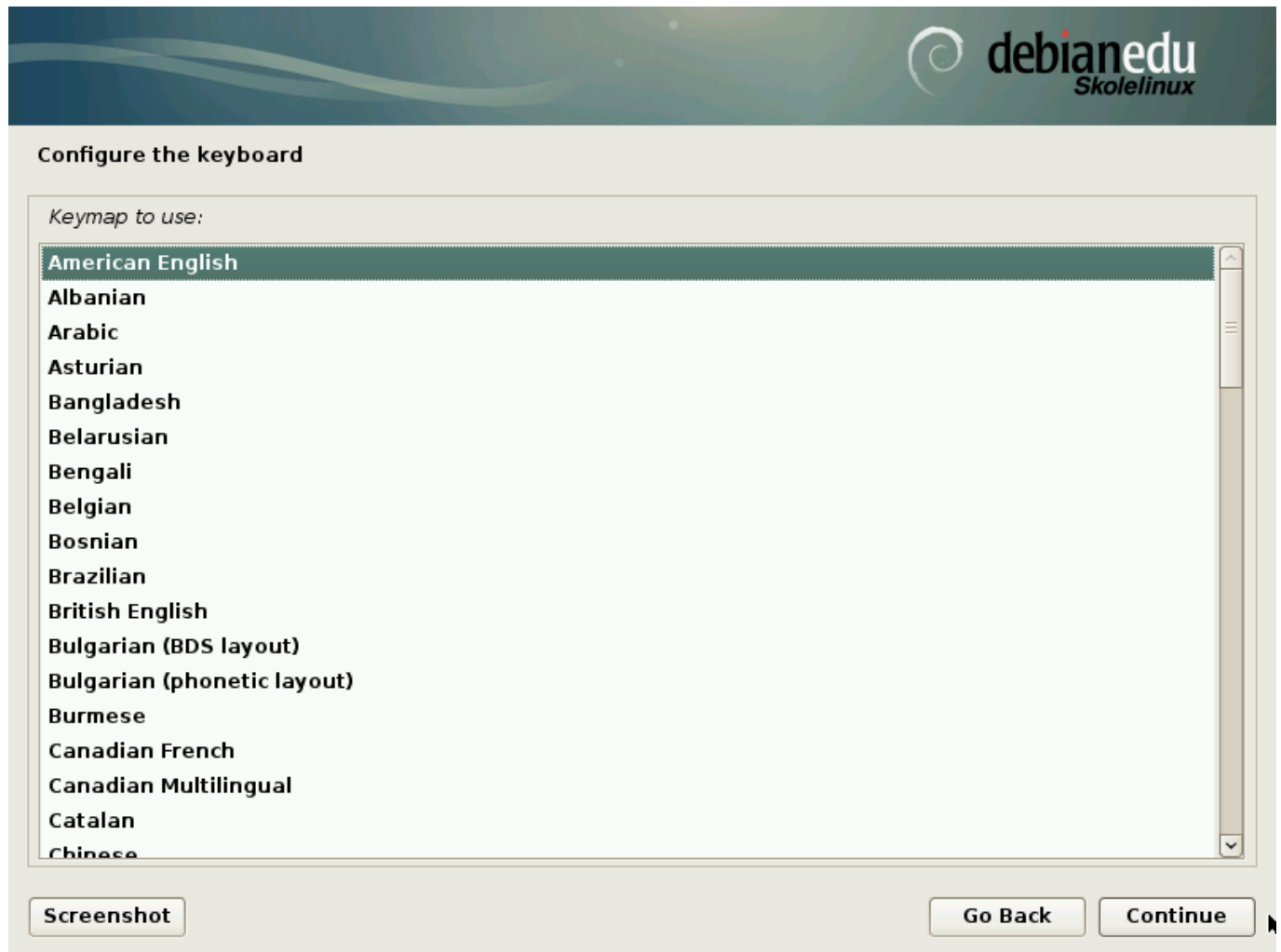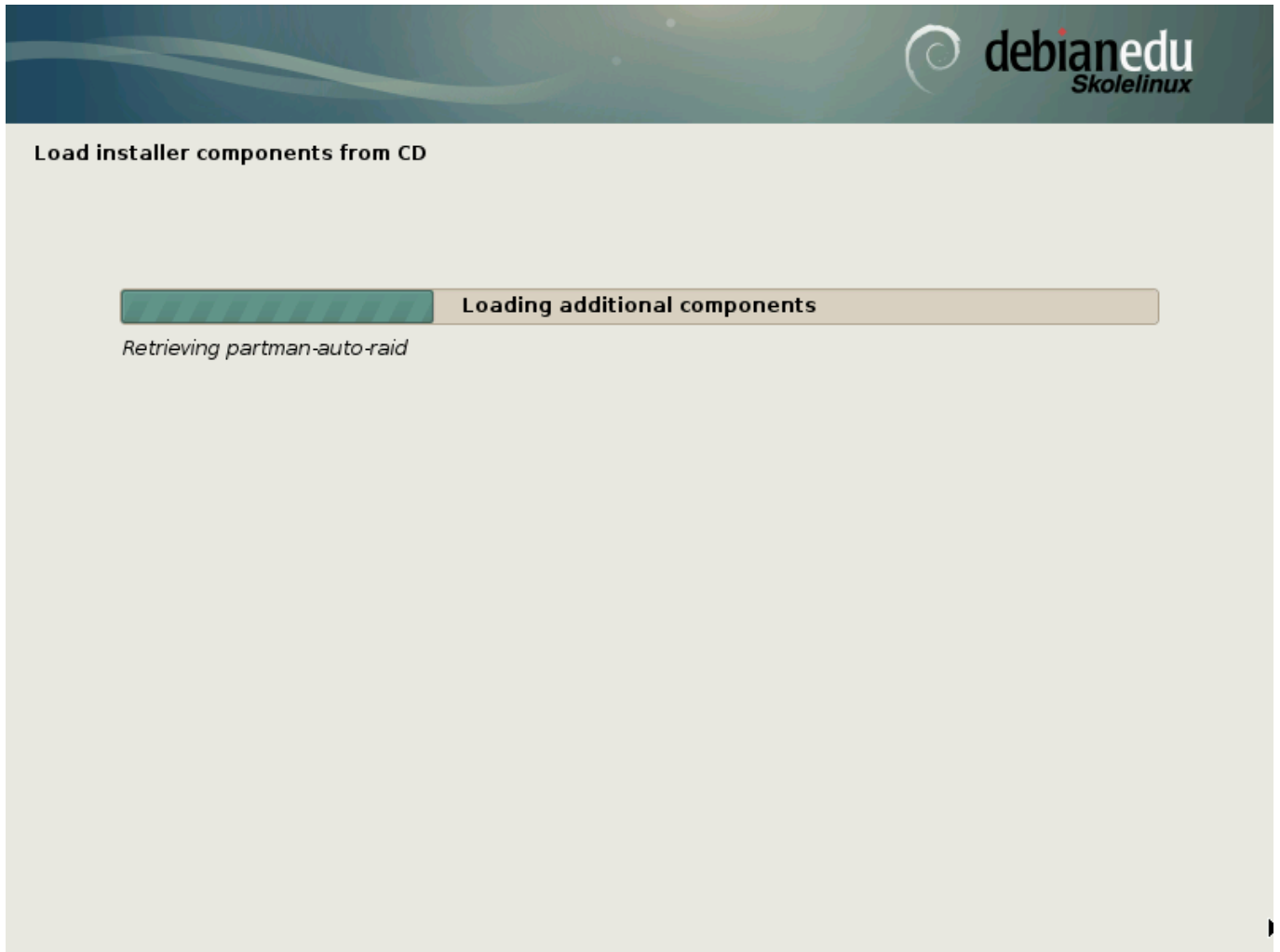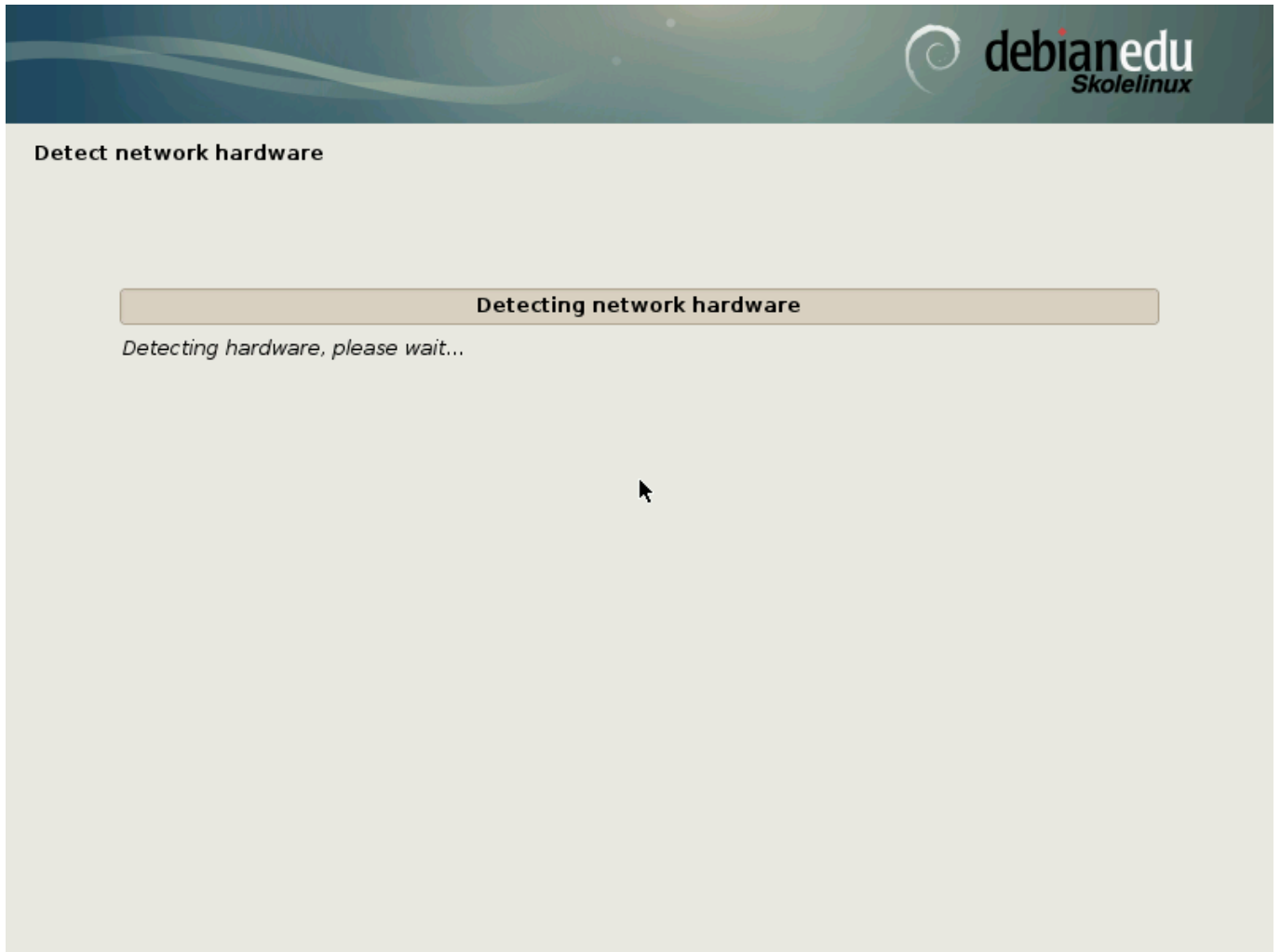
Choose Debian Edu profile

Profiles determine how the machine can be used out-of-the-box:

- Main Server: reserved for the Debian Edu server. It does not
      include any GUI (Graphical User Interface). There
      should only be one such server on a Debian Edu
      network.
- Workstation: for normal machines on the Debian Edu network.
- Roaming Workstation: for single user machines on the Debian Edu
      network which some times travel outside the network.
- LTSP Server:
      includes 'Workstation' and requires two network
      cards.
- Standalone: for machines meant to be used outside the Debian Edu
      network. It includes a GUI and conflicts with other
      profiles.
- Minimal: fully integrated into the Debian Edu network but
      contains only a basic system without any GUI.

Profile(s) to apply to this machine:

☑ Main Server
☑ Workstation
☐ Roaming Workstation
☑ LTSP Server
☐ Standalone
☐ Minimal

Screenshot   Continue

Really use the automatic partitioning tool?

This will destroy the partition table on all disks in the machine. REPEAT: THIS WILL WIPE CLEAN ALL HARD DISKS IN THE MACHINE! If you have important data that are not backed up, you may want to stop now in order to do a backup. In that case, you'll have to restart the installation later.

Really use the automatic partitioning tool?

◉ No

○ Yes

Screenshot   Continue

Really use the automatic partitioning tool?

This will destroy the partition table on all disks in the machine. REPEAT: THIS WILL WIPE CLEAN ALL HARD DISKS IN THE MACHINE! If you have important data that are not backed up, you may want to stop now in order to do a backup. In that case, you'll have to restart the installation later.

Really use the automatic partitioning tool?

○ No

◉ Yes

Screenshot   Continue

Participate in the package usage survey?

The system may anonymously supply the distribution developers with statistics about the most used packages on this system. This information influences decisions such as which packages should go on the first distribution CD.

If you choose to participate, the automatic submission script will run once every week, sending statistics to the distribution developers. The collected statistics can be viewed on http://popcon.debian.org/.

This choice can be later modified by running "dpkg-reconfigure popularity-contest".

Participate in the package usage survey?

⦿ **No**

◯ **Yes**

Screenshot   Continue

Set up users and passwords

A user account will be created for you to use instead of the root account for non-administrative activities.

Please enter the real name of this user. This information will be used for instance as default origin for emails sent by this user as well as any program which displays or uses the user's real name. Your full name is a reasonable choice.

Full name for the new user:

John Doe

Screenshot

Go Back

Continue

Set up users and passwords

A good password will contain a mixture of letters, numbers and punctuation and should be changed at regular intervals.

Choose a password for the new user:

●●●●●●●●●

☐ **Show Password in Clear**

Please enter the same user password again to verify you have typed it correctly.

Re-enter password to verify:

●●●●●●●●●

☐ **Show Password in Clear**

Screenshot

Go Back

Continue

Partition disks

Starting up the partitioner

Scanning disks...

Install the base system

Installing the base system

Extracting coreutils...

Select and install software

Select and install software

Retrieving file 101 of 253 (38s remaining)

Build LTSP chroot

Building thin client system...
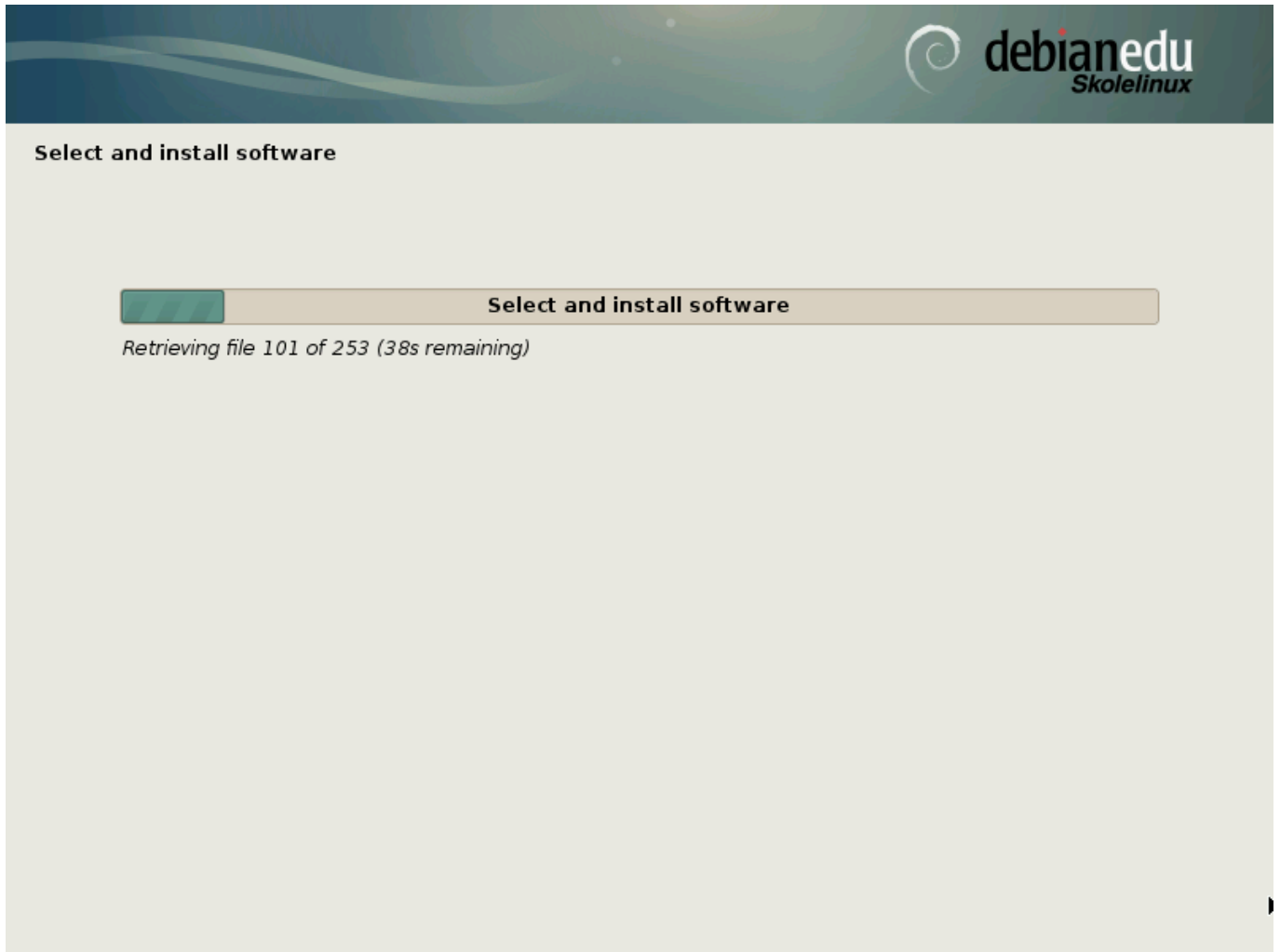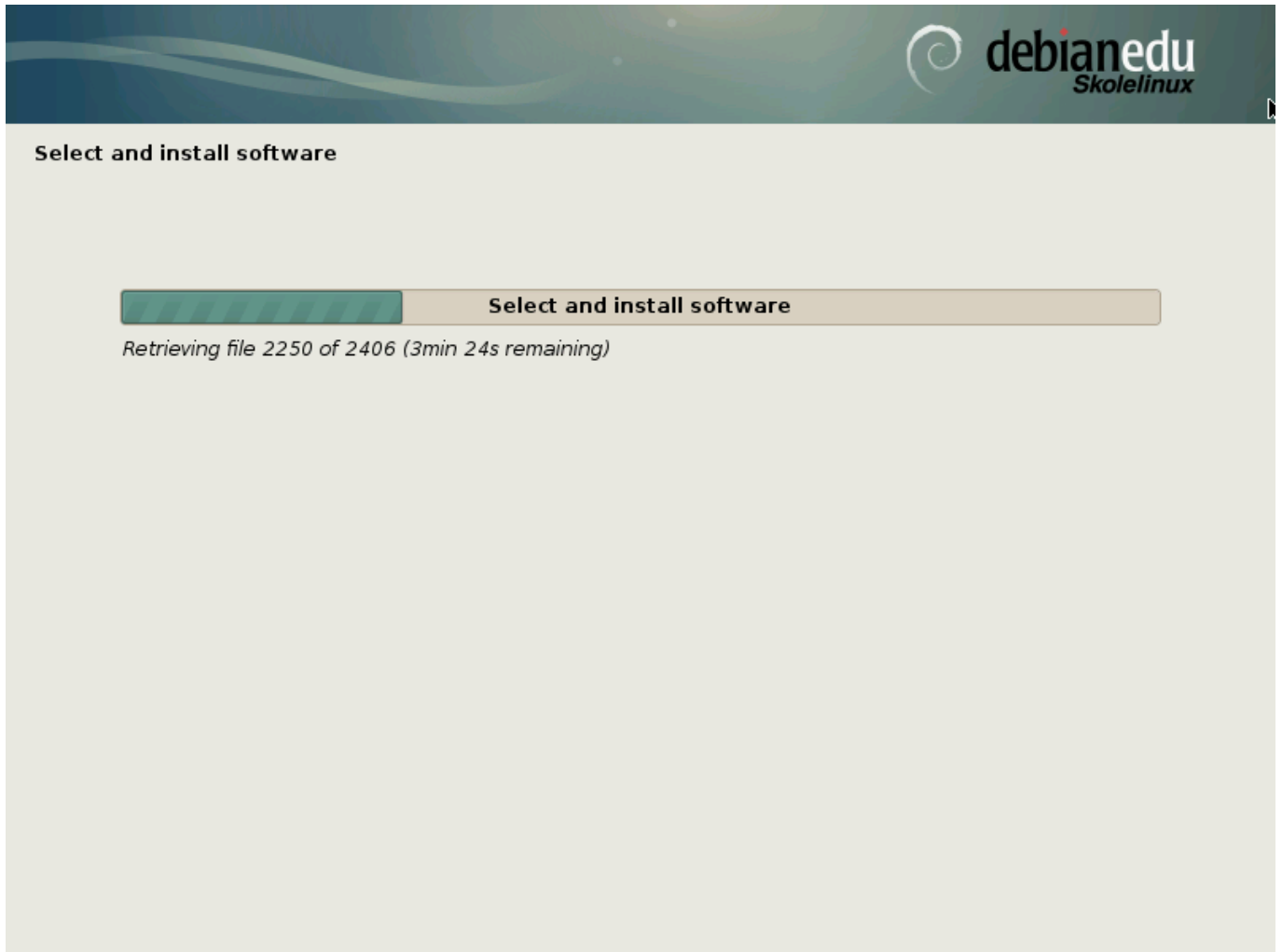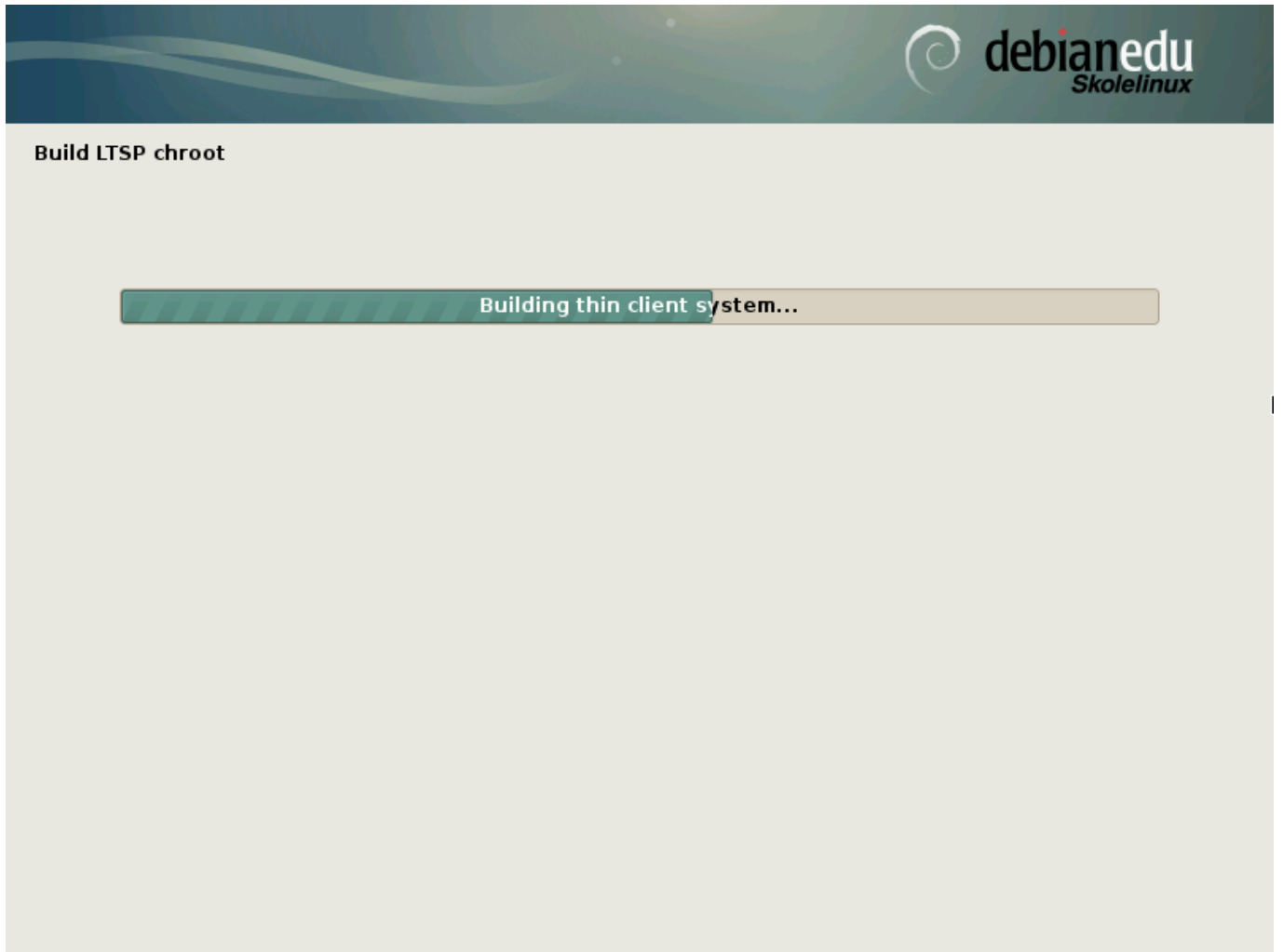
Install the GRUB boot loader on a hard disk

Installing GRUB boot loader

Retrieving file 3 of 3
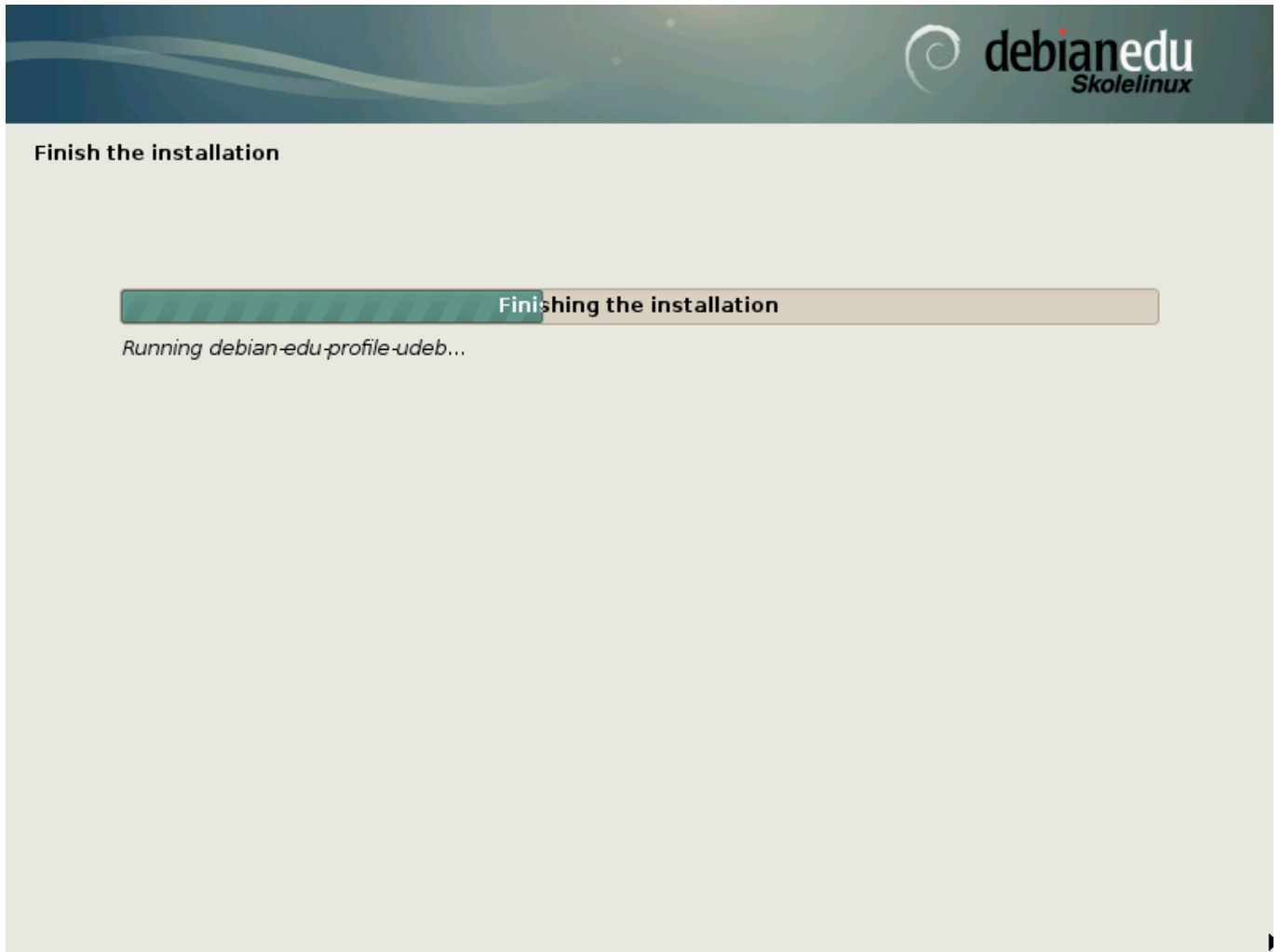
Finish the installation

Finishing the installation

Running debian-edu-profile-udeb...

Finish the installation

Installation complete

Installation is complete, so it is time to boot into your new system. Make sure to remove the installation media, so that you boot into the new system rather than restarting the installation.
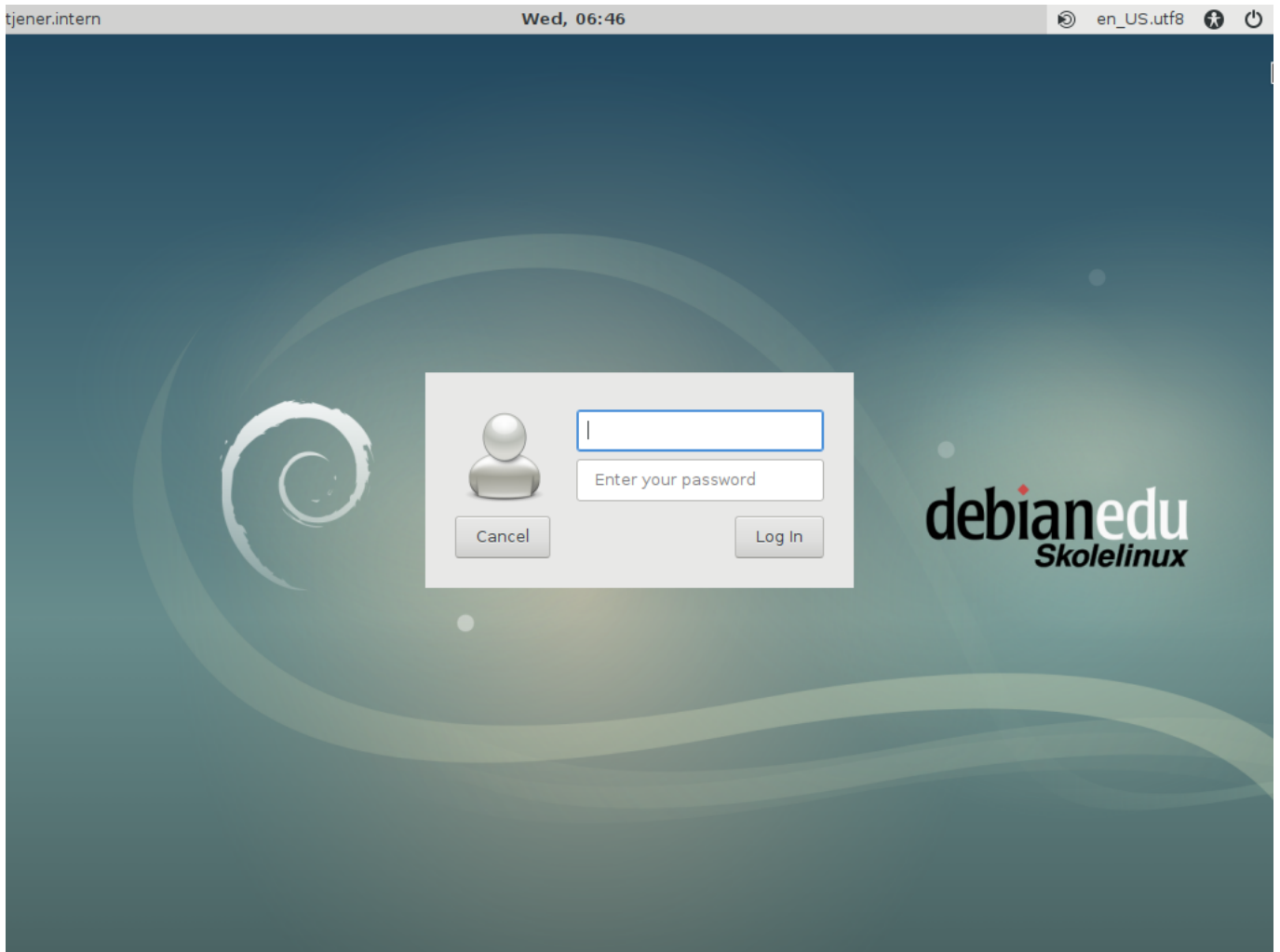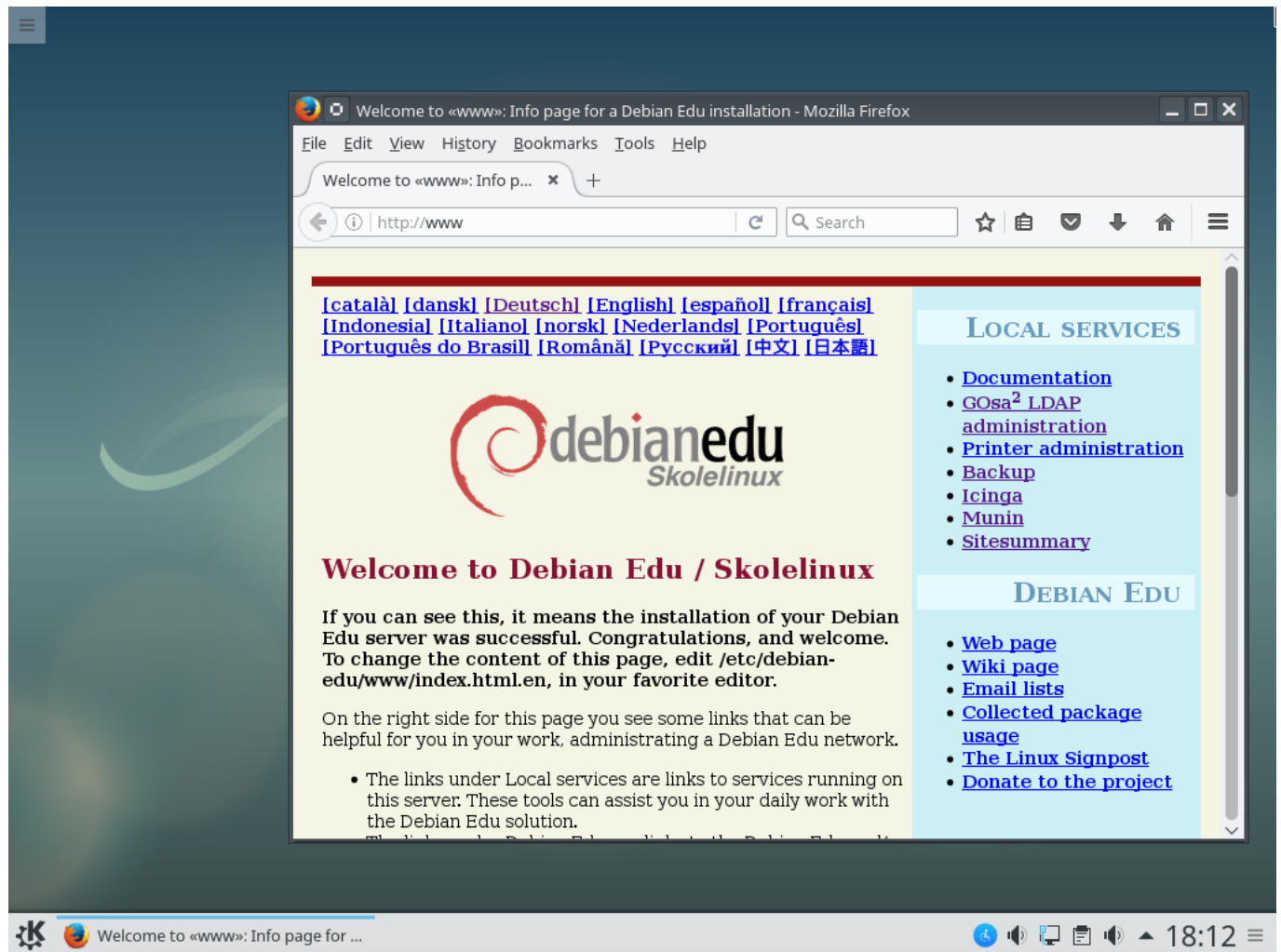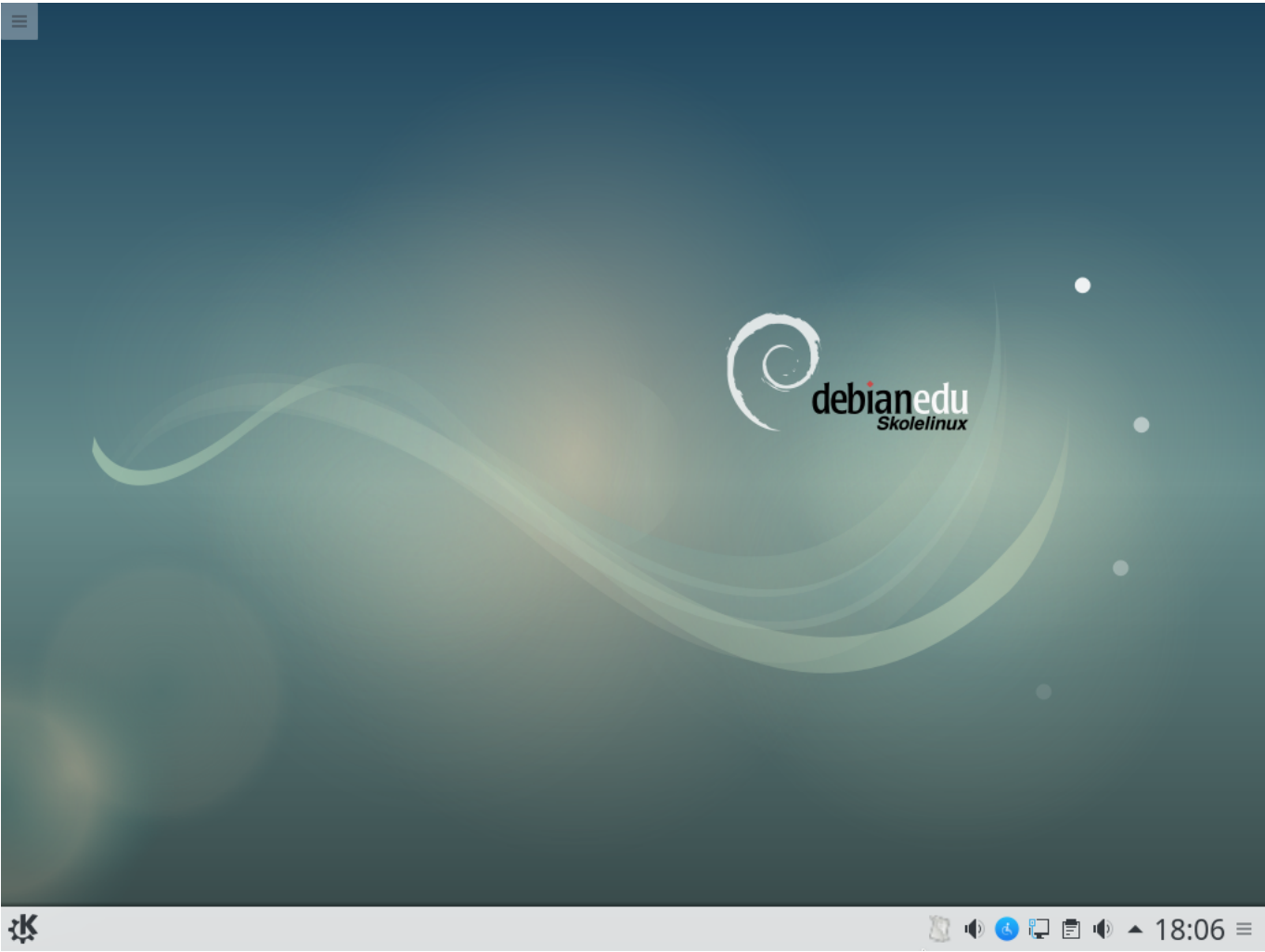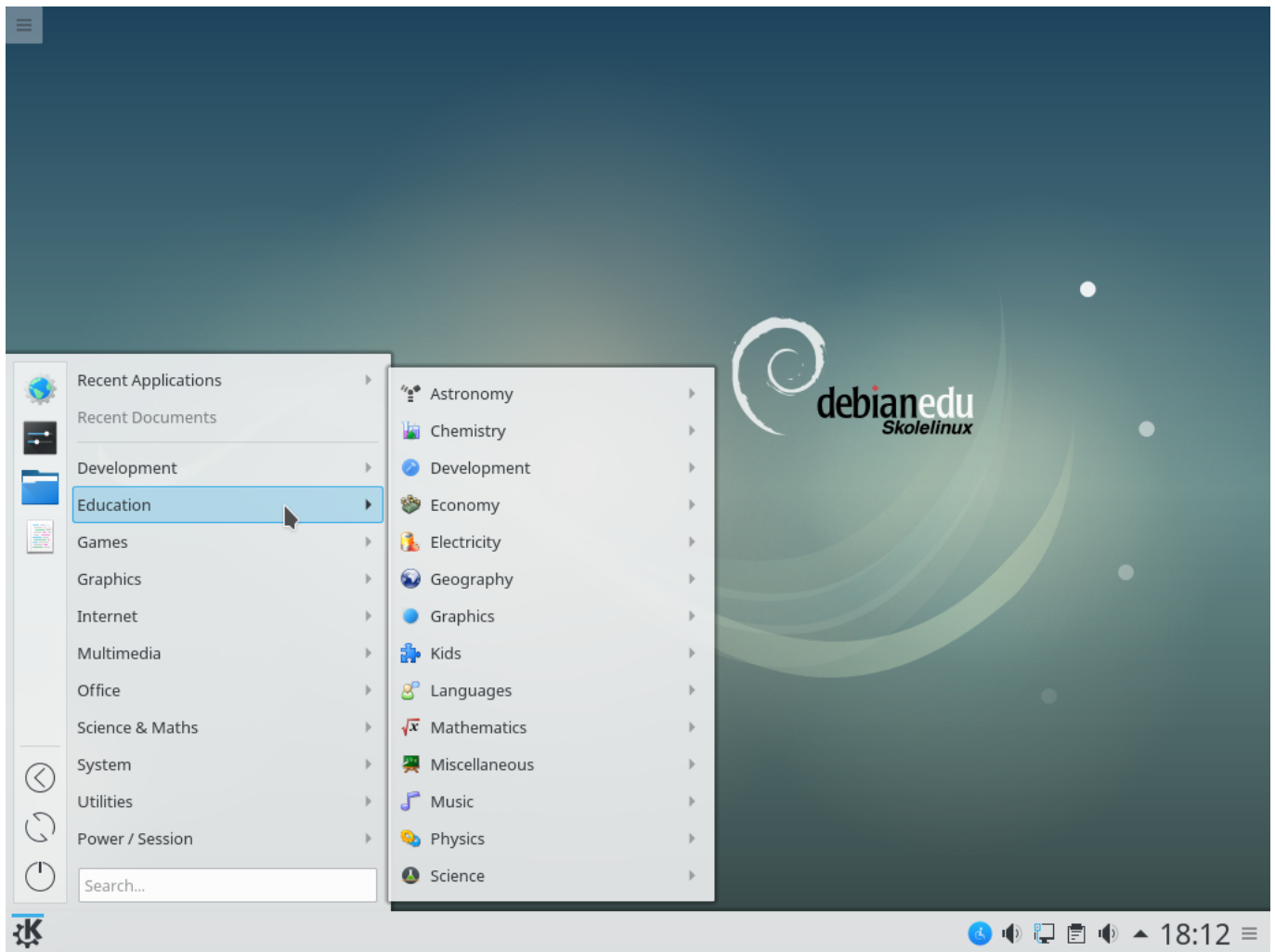
7 Getting started

7.1 Minimum steps to get started

During installation of the main server a first user account was created. In the following text this account will be referenced as "first user". This account is special, as there's no Samba account (can be added via GOsa²), the home directory permission is set to 700 (so `chmod o+x ~` is needed to make personal web pages accessible), and the first user can use `sudo` to become root.

See the information about Debian Edu specific file system access configuration before adding users.

After the installation, the first things you need to do as first user are:

1. Log into the server - with the root account you cannot log in graphically.

2. Add users with GOsa²

3. Add workstations with GOsa² - thin-client and diskless workstation can be used directly without this step.

Adding users and workstations is described in detail below, so please read this chapter completely. It covers how to perform these minimum steps correctly as well as other stuff that everybody will probably need to do.

There is additional information available elsewhere in this manual: the New features in Stretch chapter should be read by everyone who is familiar with previous releases. And for those upgrading from a previous release, make sure to read the Upgrades chapter.

⚠ If generic DNS traffic is blocked out of your network and you need to use some specific DNS server to look up internet hosts, you need to tell the DNS server to use this server as its "forwarder". Update /etc/bind/named.conf.options and specify the IP address of the DNS server to use.

The HowTo chapter covers more tips and tricks and some frequently asked questions.
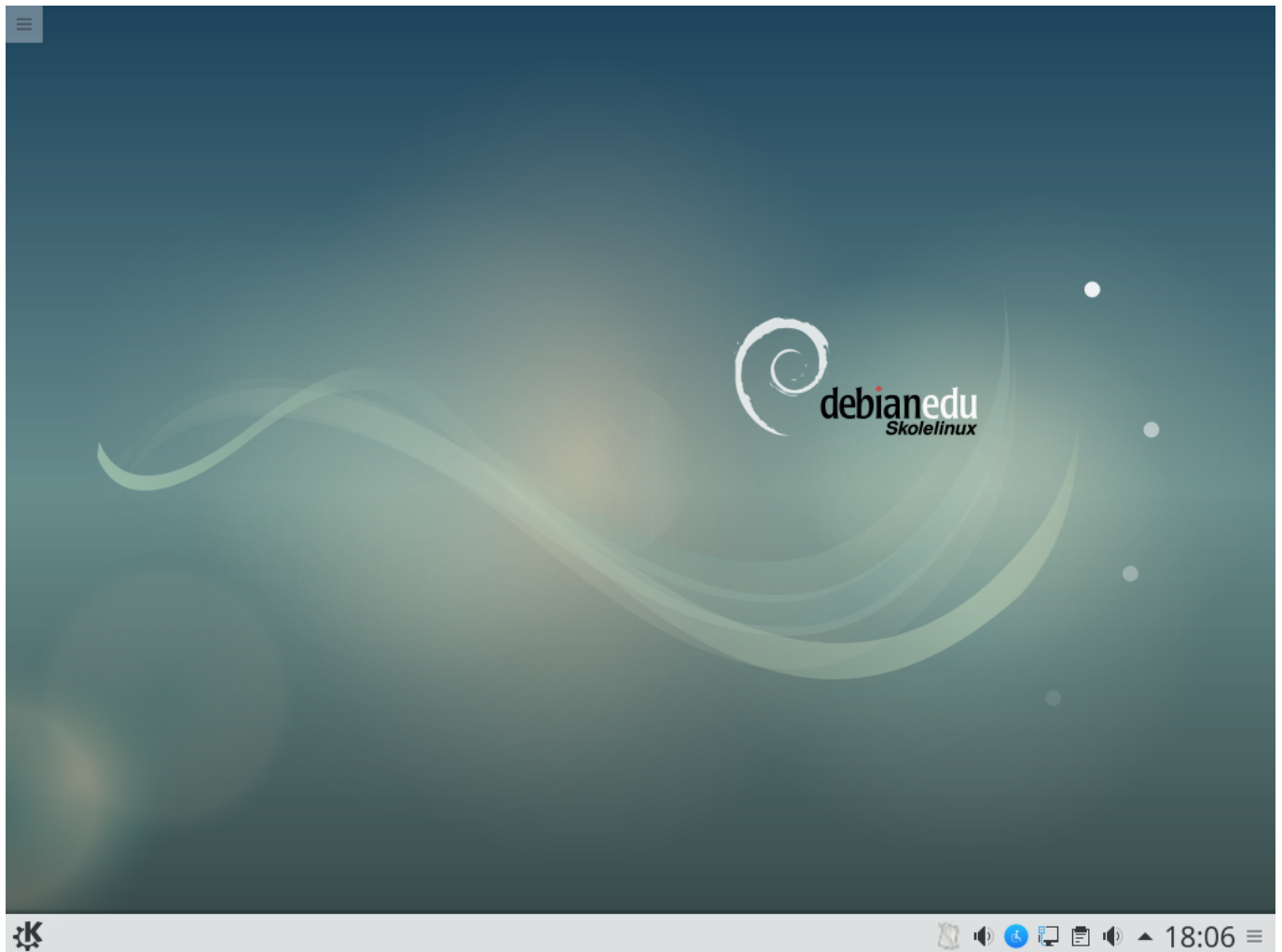
7.1.1   Services running on the main server

There are several services running on the main server which can be managed via a web management interface. We'll describe each service below.

7.2   Introduction to GOsa²

GOsa² is a web based management tool that helps to manage some important parts of your Debian Edu setup. With GOsa² you can manage (add, modify, or delete) these main groups:

- User Administration

- Group Administration

- NIS Netgroup Administrator

- Machine Administration

- DNS Administration

- DHCP Administration

For GOsa² access you need the Skolelinux main server and a (client) system with a web browser installed which can be the main server itself if it was installed as a so called combined server (Main Server + LTSP Server + Workstation profiles). If all of the mentioned before is not available, see: Installing a graphical environment on the main-server to use GOsa².

From a web browser use the URL https://www/gosa for GOsa² access, and log in as the first user.

- If you are using a new Debian Edu Stretch machine, the site certificate will be known by the browser.

- Otherwise, you will get an error message about the SSL certificate being wrong. If you know you are alone on your network, just tell the browser to accept it and ignore that.

For general information on GOsa² have a look at: https://oss.gonicus.de/labs/gosa/wiki/documentation.

7.2.1 GOsa² Login plus Overview
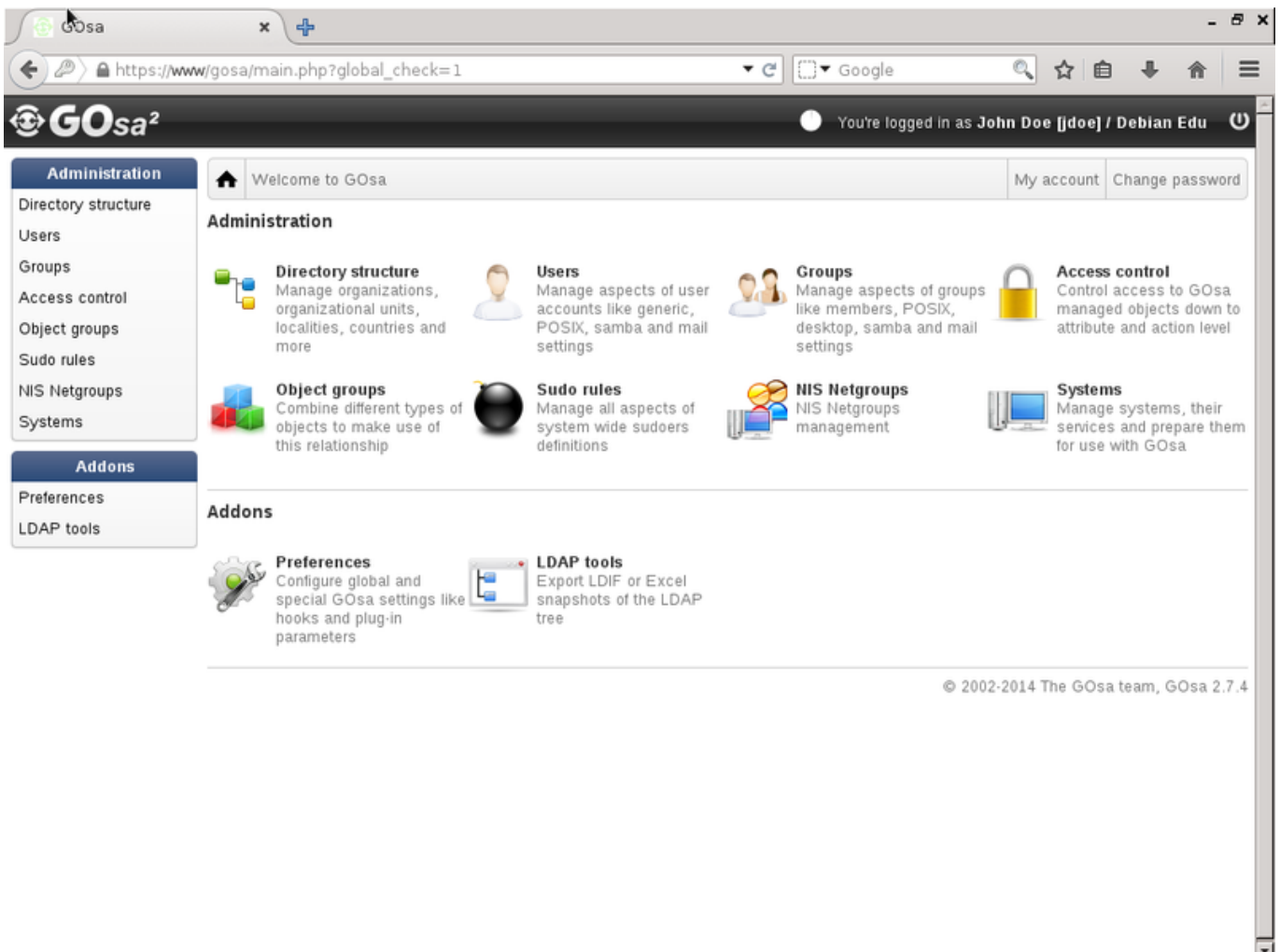
After logging in to GOsa² you will see the overview page of GOsa².

Next, you can choose a task in the menu or click any of the task icons on the overview page. For navigation, we recommend using the menu on the left side of the screen, as it will stay visible there on all administration pages offered by GOsa².

In Debian Edu, account, group, and system information is stored in an LDAP directory. This data is used not only by the main server, but also by the (diskless) workstations, the LTSP servers and the Windows machines on the network. With LDAP, account information about students, teachers, etc. only needs to be entered once. After information has been provided in LDAP, the information will be available to all systems on the whole Skolelinux network.

GOsa² is an administration tool that uses LDAP to store its information and provide a hierarchical department structure. To each "department" you can add user accounts, groups, systems, netgroups, etc. Depending on the structure of your institution, you can use the department structure in GOsa²/LDAP to transfer your organisational structure into the LDAP data tree of the Debian Edu main server.

A default Debian Edu main server installation currently provides two "departments": Teachers and Students, plus the base level of the LDAP tree. Student accounts are intended to be added to the "Students" department, teachers to the "Teachers" department; systems (servers, Skolelinux workstations, Windows machines, printers etc.) are currently added to the base level. Find your own scheme for customising this structure. (You can find an example how to create users in year groups, with common home directories for each group in the HowTo/AdvancedAdministration chapter of this manual.)

Depending on the task that you want to work on (manage users, manage groups, manage systems, etc.) GOsa² presents you with a different view on the selected department (or the base level).

7.3   User Management with GOsa²

First, click on "Users" in the left navigation menu. The right side of the screen will change to show a table with department folders for "Students" and "Teachers" and the account of the GOsa² Super-Administrator (the first created user). Above this table you can see a field called *Base* that allows you to navigate through your tree structure (move your mouse over that area and a drop-down menu will appear) and to select a base folder for your intended operations (e.g. adding a new user).

7.3.1   Adding users

Next to that tree navigation item you can see the "Actions" menu. Move your mouse over this item and a submenu appears on screen; choose "Create" here, and then "User". You will be guided by the user creation wizard.

- The most important thing to add is the template (newstudent or newteacher) and the full name of your user (see image).

- As you follow the wizard, you will see that GOsa² generates a username automatically based on the real name. It automatically chooses a username that doesn't exist yet, so multiple users with the same full name are not a problem. Note that GOsa² can generate invalid usernames if the full name contains non-ASCII characters.

- If you don't like the generated username you can select another username offered in the drop-down box, but you do not have a free choice here in the wizard. (If you want to be able to edit the proposed username, open `/etc/gosa/gosa.conf` with an editor and add `allowUIDProposalModification="true"` as an additional option to the "location definition".)

- When the wizard has finished, you are presented with the GOsa² screen for your new user object. Use the tabs at the top to check the completed fields.

After you have created the user (no need to customise fields the wizard has left empty for now), click on the "Ok" button in the bottom-right corner.

As the last step GOsa² will ask for a password for the new user. Type that in twice and then click "Set password" in the bottom-right corner. ⚠ Some characters may not be allowed as part of the password.

If all went well, you can now see the new user in the user list table. You should now be able to log in with that username on any Skolelinux machine within your network.

7.3.2   Search, modify and delete users
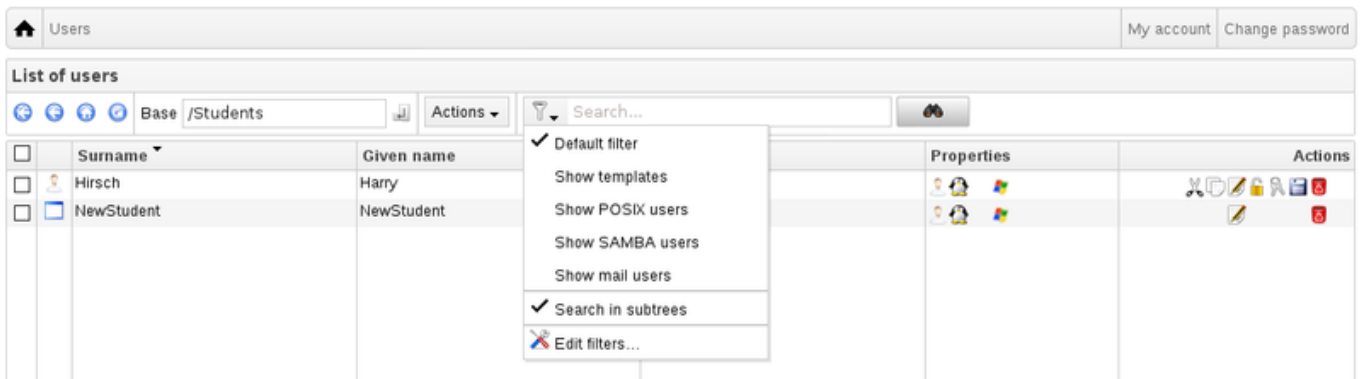
To modify or delete a user, use GOsa² to browse the list of users on your system. On the middle of the screen you may open the "Filter" box, a search tool provided by GOsa². If you don't know the exact location of your user account in your tree, change to the base level of the GOsa²/LDAP tree and search there with the option marked "Search in subtrees".

When using the "Filter" box, results will immediately appear in the middle of the text in the table list view. Every line represents a user account and the items farthest to the right on each line are little icons that provide actions for you: cut entry, copy entry, edit user, lock account, set password, take snapshot (not usable) and remove user.

A new page will show up where you can directly modify information about the user, change the password of the user and modify the list of groups the user belongs to.

7.3.3   Set passwords

The students can change their own passwords by logging into GOsa² with their own usernames. To ease the access of GOsa², an entry called Gosa is provided in the desktop's System (or System settings) menu. A logged-in student will be

presented with a very minimal version of GOsa² that only allows access to the student's own account data sheet and to the set-password dialog.

Teachers logged in under their own usernames have special privileges in GOsa². They are shown a more privileged view of GOsa², and can change the passwords for all student accounts. This may be very handy during class.

To administratively set a new password for a user

1. search for the user to be modified, as explained above

2. click on the key symbol at the end of the line that the username is shown in

3. on the page subsequently presented you can set a new password chosen by yourself

Beware of security implications due to easy to guess passwords!

7.3.4   Advanced user management

It is possible to mass-create users with GOsa² by using a CSV file, which can be created with any good spreadsheet software (for example `localc`). At least, entries for the following fields have to be provided: uid, last name (sn), first name (givenName) and password. Make sure that there are no duplicate entries in the uid field. Please note that the check for duplicates must include already existing uid entries in LDAP (which could be obtained by executing `getent passwd | grep tjener/home | cut -d":" -f1` on the command line).

These are the format guidelines for such a CSV file (GOsa² is quite intolerant about them):

- Use "," as field separator

- Do not use quotes

- The CSV file **must not** contain a header line (of the sort that normally contains the column names)

- The order of the fields is not relevant, and can be defined in GOsa² during the mass import

The mass import steps are:

1. click the "LDAP Manager" link in the navigation menu on the left

2. click the "Import" tab in the screen on the right

3. browse your local disk and select a CSV file with the list of users to be imported

4. choose an available user template that should be applied during mass import (such as NewTeacher or NewStudent)

5. click the "Import" button in the bottom-right corner

It's a good idea to do some tests first, preferably using a CSV file with a few fictional users, which can be deleted later.

7.4 Group Management with GOsa²

The management of groups is very similar to the management of users.

You can enter a name and a description per group. Make sure that you choose the right level in the LDAP tree when creating a new group.

By default, the appropriate Samba group isn't created. If you forgot to check the Samba group option during group creation, you can modify the group later on.

Adding users to a newly created group takes you back to the user list, where you most probably would like to use the filter box to find users. Check the LDAP tree level, too.

The groups entered in the group management are also regular unix groups, so you can use them for file permissions too.

7.4.1 Group Management on the command line

```
# List existing group mapping between UNIX and Windows groups.
net groupmap list

# Add your new or otherwise missing groups:
```

```
net groupmap add unixgroup=NEW_GROUP type=domain ntgroup="NEW_GROUP"\
                  comment="DESCRIPTION OF NEW GROUP"
```

7.5 Machine Management with GOsa²

Machine management basically allows you to manage all networked devices in your Debian Edu network. Every machine added to the LDAP directory using GOsa² has a hostname, an IP address, a MAC address and a domain name (which is usually "intern"). For a fuller description of the Debian Edu architecture see the architecture chapter of this manual.

Diskless workstations and thin-clients work out-of-the-box when connected to the main network. Only workstations with disks **have to** be added with GOsa², but all **can**.

To add a machine, use the GOsa² main menu, systems, add. You can use an IP address/hostname from the preconfigured address space 10.0.0.0/8. Currently there are only two predefined fixed addresses: 10.0.2.2 (tjener) and 10.0.0.1 (gateway). The addresses from 10.0.16.20 to 10.0.31.254 (roughly 10.0.16.0/20 or 4000 hosts) are reserved for DHCP and are assigned dynamically.

To assign a host with the MAC address 52:54:00:12:34:10 a static IP address in GOsa² you have to enter the MAC address, the hostname and the IP; alternatively you might click the `Propose ip` button which will show the first free fixed address in 10.0.0.0/8, most probably something like 10.0.0.2 if you add the first machine this way. It may be better to first think about your network: for example you could use 10.0.0.x with x>10 and x<50 for servers, and x>100 for workstations. Don't forget to activate the just added system. With the exception of the main server all systems will then have a matching icon.

If the machines have booted as thin clients/diskless workstations or have been installed using any of the networked profiles, the `sitesummary2ldapdhcp` script can be used to automatically add machines to GOsa². For simple machines it will work out of the box, for machines with more than one mac address the actually used one has to be chosen, `sitesummary2ldapdhcp -h` shows usage information. Please note, that the IP addresses shown after usage of `sitesummary2ldapdhcp` belong to the dynamic IP range. These systems can then be modified to suit your network: rename each new system, activate DHCP and DNS, add it to netgroups if needed, reboot the system afterwards. The following screenshots show how this looks in practice:

```
root@tjener:~# sitesummary2ldapdhcp -a -i ether-00:04:76:d3:28:b7 -t workstations
info: Create GOsa machine for auto-mac-00-04-76-d3-28-b7.intern [10.0.16.21] id ether ↩
    -00:04:76:d3:28:b7.

Enter password if you want to activate these changes, and ^c to abort.

Connecting to LDAP as cn=admin,ou=ldap-access,dc=skole,dc=skolelinux,dc=no
enter password:
```

A cronjob updating DNS runs every hour; `su -c ldap2bind` can be used to trigger the update manually.

7.5.1 Search and delete machines

Searching for and deleting machines is quite similar to searching for and deleting users, so that information is not repeated here.

7.5.2 Modify existing machines / Netgroup management

After adding a machine to the LDAP tree using GOsa², you can modify its properties using the search functionality and clicking on the machine name (as you would with users).

The format of these system entries is similar to the one you already know from modifying user entries, but the fields mean different things in this context.

For example, adding a machine to a `NetGroup` does not modify the file access or command execution permissions for that machine or the users logged in to that machine; instead it restricts the services that machine can use on your main-server.

The default installation provides the `NetGroups`

- cups-queue-autoflush-hosts

- cups-queue-autoreenable-hosts

- fsautoresize-hosts

- ltsp-server-hosts

- netblock-hosts

- printer-hosts

- server-hosts

- shutdown-at-night-hosts

- winstation-hosts

- workstation-hosts

Currently the `NetGroup` functionality is used for

- NFS.

  - The home directories are exported by the main-server to be mounted by the workstations and the LTSP servers. For security reasons, only hosts within the workstation-hosts, ltsp-server-hosts and server-hosts `NetGroups` can mount the exported NFS shares. So it is rather important to remember to configure these kinds of machines properly in the LDAP tree using GOsa[2] and to configure them to use static IP addresses from LDAP.

    ⚠ Remember to configure workstations and LTSP servers properly with GOsa[2], or your users won't be able to access their home directories. Diskless workstations and thin clients don't use NFS, so they don't need to be configured.

- fs-autoresize

  - Debian Edu machines in this group will automatically resize LVM partitions that run out of space.

- shutdown at night

  - Debian Edu machines in this group will automatically shut down at night to save energy.

- CUPS (cups-queue-autoflush-hosts and cups-queue-autoreenable-hosts)

  - Debian Edu machines in these groups will automatically flush all print queues every night, and re-enable any disabled print queue every hour.

- netblock-hosts

  - Debian Edu machines in this group will be allowed to connect to machines only on the local network. Combined with web proxy restrictions this might be used during exams.

Another important part of machine configuration is the 'Samba host' flag (in the 'Host information' area). If you plan to add existing Windows systems to the Skolelinux Samba domain, you need to add the Windows host to the LDAP tree and set this flag to be able to join the Windows host to the domain. For more information about adding Windows hosts to the Skolelinux network see the HowTo/NetworkClients chapter of this manual.

8 Printer Management

For Printer Management point your web browser to https://www:631 and accept the self-signed certificate. This is the normal CUPS management interface where you can add/delete/modify your printers and can clean up the printing queue. By default only root is allowed but this can be changed: Open /etc/cups/cups-files.conf with an editor and add one or more valid group names matching your site policy to the line containing `SystemGroup lpadmin`. Existing GOsa[2] groups that might be used are `gosa-admins` and `printer-admins` (both with the first user as member), `teachers` and `jradmins` (no members after installation).

9   Clock synchronisation

The default configuration in Debian Edu is to keep the clocks on all machines synchronous but not necessarily correct. NTP is used to update the time. The clocks will be synchronised with an external source by default. This can cause machines to keep the external Internet connection open if it is created when used.

⚠ If you use dialup or ISDN and pay per minute, you want to change this default setting.

To disable synchronisation with an external clock, the file /etc/ntp.conf on the main-server and all clients and LTSP chroots need to be modified. Add comment ("#") marks in front of the `server` entries. After this, the NTP server needs to be restarted by running `/etc/init.d/ntp restart` as root. To test if a machine is using the external clock sources, run `ntpq -c lpeer`.

10   Extending full partitions

Because of a possible bug with automatic partitioning, some partitions might be too full after installation. To extend these partitions, run `debian-edu-fsautoresize -n` as root. See the "Resizing Partitions" HowTo in the administration HowTo chapter for more information.

11   Maintenance

11.1   Updating the software

This section explains how to use `apt-get upgrade`.

Using `apt-get` is really simply. To update a system you need to execute two commands on the command line as root: `apt-get update` (which updates the lists of available packages) and `apt-get upgrade` (which upgrades the packages for which an upgrade is available).

As Debian Edu uses libpam-tmpdir, setting a per user TMP directory, it is a good idea to run apt-get without the TMP and TMPDIR variables set in the LTSP chroot. It is also a good idea to upgrade using the C locale to get known output and sorting order, even though that making a difference is a bug in a package.

```
LC_ALL=C apt-get update ; LC_ALL=C TMP= TMPDIR= ltsp-chroot apt-get update
LC_ALL=C apt-get upgrade -y
LC_ALL=C TMP= TMPDIR= ltsp-chroot -p apt-get upgrade -y
ltsp-update-kernels # If a new kernel was installed
```

⚠ It is important to run `ltsp-update-kernels` if a new kernel was installed in the LTSP chroot, to keep the kernel and kernel modules in sync. The kernel is handed out via TFTP when the machine does PXE boot, and the kernel modules are fetched from the LTSP chroot.

⚠ Run `ltsp-update-image` to re-generate the NBD image(s).

It is also a good idea to install `cron-apt` and `apt-listchanges` and configure them to send mail to an address you are reading.

`cron-apt` will notify you once a day via email about any packages that can be upgraded. It does not install these upgrades, but does download them (usually in the night), so you don't have to wait for the download when you do `apt-get upgrade`.

Automatic installation of updates can be done easily if desired, it just needs the `unattended-upgrades` package to be configured as described on wiki.debian.org/UnattendedUpgrades. On new installations security updates are enabled by default.

`apt-listchanges` can send new changelog entries to you via email, or alternativly display them in the terminal when running `aptitude` or `apt-get`.

11.1.1 Keep yourself informed about security updates

Running `cron-apt` as described above is a good way to learn when security updates are available for installed packages. Another way to stay informed about security updates is to subscribe to the Debian security-announce mailinglist, which has the benefit of also telling you what the security update is about. The downside (compared to `cron-apt`) is that it also includes information about updates for packages which aren't installed.

11.2 Backup Management

For backup management point your browser to `https://www/slbackup-php`. Please note that you need to access this site via SSL, since you have to enter the root password there. If you try to access this site without using SSL it will fail. Note: the site will only work if you temporarily allow ssh root login on the backup server (main server 'tjener' by default).

By default tjener will back up /skole/tjener/home0, /etc/, /root/.svk and LDAP to /skole/backup which is under the LVM. If you only want to have spare copies of things (in case you delete them) this setup should be fine for you.

⚠ Be aware that this backup scheme doesn't protect you from failing hard drives.

If you want to back up your data to an external server, a tape device or another hard drive you'll have to modify the existing configuration a bit.

If you want to restore a complete folder, your best option is to use the command-line:

```
$ sudo rdiff-backup -r <date>  \
    /skole/backup/tjener/skole/tjener/home0/user \
    /skole/tjener/home0/user_<date>
```

This will leave the content from /skole/tjener/home0/user for <date> in the folder /skole/tjener/home0/user_<date>

If you want to restore a single file, then you should be able to select the file (and the version) from the web interface, and download only that file.

If you want to get rid of older backups, choose "Maintenance" in the menu on the backup page and select the oldest snapshot to keep:

Maintenance

tjener ▾ | Choose | Oldest snapshot to keep: 2013-07-02T22:30:04+02:00 ▾ | Delete older |

MENU

- Status
- Config
- Restore
- Maintenance
- Logout

11.3 Server Monitoring

11.3.1 Munin

The Munin trend reporting system is available from `https://www/munin/`. It provides system status measurement graphs on a daily, weekly, monthly and yearly basis, and provides the system administrator with help when looking for bottlenecks and the source of system problems.

The list of machines being monitored using Munin is generated automatically, based on the list of hosts reporting to sitesummary. All hosts with the package munin-node installed are registered for Munin monitoring. It will normally take one day from a machine being installed until Munin monitoring starts, because of the order the cron jobs are executed. To speed up the process, run `sitesummary-update-munin` as root on the sitesummary server (normally the main server). This will update the /etc/munin/munin.conf file.

The set of measurements being collected is automatically generated on each machine using the `munin-node-configure` program which probes the plugins available from `/usr/share/munin/plugins/` and symlinks the relevant ones to `/etc/munin/plugin`

Information about Munin is available from http://munin-monitoring.org/.

11.3.2 Icinga

Icinga system and service monitoring is available from https://www/icinga/. The set of machines and services being monitored is automatically generated using information collected by the sitesummary system. The machines with the profile Main-server and LTSP-server receive full monitoring, while workstations and thin clients receive simple monitoring. To enable full monitoring on a workstation, install the `nagios-nrpe-server` package on the workstation.

The username is `icingaadmin` and the default password is `skolelinux`. For security reasons, avoid using the same password as root. To change the password you can run the following command as root:

```
htpasswd /etc/icinga/htpasswd.users icingaadmin
```

By default Icinga does not send email. This can be changed by replacing `notify-by-nothing` with `host-notify-by-email` and `notify-by-email` in the file `/etc/icinga/sitesummary-template-contacts.cfg`.

The Icinga configuration file used is `/etc/icinga/sitesummary.cfg`. The sitesummary cron job generates `/var/lib/sitesummar` with the list of hosts and services to monitor.

Extra Icinga checks can be put in the file `/var/lib/sitesummary/icinga-generated.cfg.post` to get them included in the generated file.

Information about Icinga is available from https://www.icinga.com/ or in the `icinga-doc` package.

11.3.2.1 Common Icinga warnings and how to handle them

Here are instructions on how to handle the most common Icinga warnings.

11.3.2.1.1 DISK CRITICAL - free space: /usr 309 MB (5% inode=47%):

The partition (/usr/ in the example) is too full. There are in general two ways to handle this: (1) remove some files or (2) increase the size of the partition. If the partition is /var/, purging the APT cache by calling `apt-get clean` might remove some files. If there is more room available in the LVM volume group, running the program `debian-edu-fsautoresize` to extend the partitions might help. To run this program automatically every hour, the host in question can be added to the `fsautoresize-hosts` netgroup.

11.3.2.1.2 APT CRITICAL: 13 packages available for upgrade (13 critical updates).

New package are available for upgrades. The critical ones are normally security fixes. To upgrade, run 'apt-get upgrade && apt-get dist-upgrade' as root in a terminal or log in via ssh to do the same. On LTSP servers, remember to also update the LTSP chroot using `ltsp-chroot apt-get update && ltsp-chroot apt-get upgrade`.

If you do not want to manually upgrade packages and trust Debian to do a good job with new versions, you can configure `unattended-upgrades` to automatically upgrade all new packages every night. This will not upgrade the LTSP chroots.

To upgrade the LTSP chroot, one can use `ltsp-chroot apt-get update && ltsp-chroot apt-get upgrade`. On 64-bit servers, one will have to add `-a i386` as an argument to ltsp-chroot. It is a good idea to update the chroot when updating the host system.

11.3.2.1.3 WARNING - Reboot required : running kernel = 2.6.32-37.81.0, installed kernel = 2.6.32-38.83.0

The running kernel is older than the newest installed kernel, and a reboot is required to activate the newest installed kernel. This is normally fairly urgent, as new kernels normally show up in Debian Edu to fix security issues.

11.3.2.1.4 WARNING: CUPS queue size - 61

The printer queues in CUPS have a lot of jobs pending. This is most likely because of a unavailable printer. Disabled print queues are enabled every hour on hosts that are member of the `cups-queue-autoreenable-hosts` netgroup, so for such hosts no manual action should be required. The print queues are emptied every night on hosts that are member of the `cups-queue-autoflush-hosts` netgroup. If a host have a lot of jobs in their queue, consider adding this host to one or both of these netgroups.

11.3.3 Sitesummary

Sitesummary is used to collect information from each computer and submit it to the central server. The information collected is available in `/var/lib/sitesummary/entries/`. Scripts in `/usr/lib/sitesummary/` are available to generate reports.

A simple report from sitesummary without any details is available from `https://www/sitesummary/`.

Some documentation on sitesummary is available from `http://wiki.debian.org/DebianEdu/HowTo/SiteSummary`

11.4 More information about Debian Edu customisations

More information about Debian Edu customisations useful for system administrators can be found in the Administration Howto chapter and in the Advanced administration Howto chapter

12 Upgrades

⚠ Before reading this upgrade guide, please note that live updates to your production servers are carried out at your own risk. **Debian Edu/Skolelinux comes with ABSOLUTELY NO WARRANTY, to the extent permitted by applicable law.**

Please read this chapter and the New features in Stretch chapter of this manual completely before attempting to upgrade.

12.1 General notes on upgrading

Upgrading Debian from one distribution to the next is generally rather easy. For Debian Edu this is unfortunately not yet true as we modify configuration files in ways we shouldn't. (See Debian bug 311188 for more information.) Upgrading is still possible but may require some work.

In general, upgrading the servers is more difficult than the workstations and the main-server is the most difficult to upgrade. The diskless machines are easy, as their chroot environment can be deleted and recreated, if you haven't modified it. If you have, the chroot is basically a workstation chroot anyway, so rather easy to upgrade.

If you want to be sure that after the upgrade everything works as before, you should test the upgrade on a test system or systems configured the same way as your production machines. There you can test the upgrade without risk and see if everything works as it should.

Make sure to also read the information about the current Debian Stable release in its installation manual.

It may also be wise to wait a bit and keep running Oldstable for a few weeks longer, so that others can test the upgrade and document any problems they experience. The Oldstable release of Debian Edu will receive continued support for some time after the next Stable release, but when Debian ceases support for Oldstable, Debian Edu will necessarily do the same.

12.2 Upgrades from Debian Edu Jessie

⚠ Be prepared: make sure you have tested the upgrade from Jessie in a test environment or have backups ready to be able to go back.

Please note that the following recipe applies to a default Debian Edu main server installation (desktop=kde, profiles Main Server, Workstation, LTSP Server). (For a general overview concerning jessie to stretch upgrade, see: https://www.debian.org/releases/stretch/releasenotes)

Don't use X, use a virtual console, log in as root.

Please note one difference between `apt` and `apt-get` in Stretch: By default `apt-get` keeps downloaded packages, `apt` removes them from the cache (after successful installation).

If `apt` finishes with an error, try to fix it and/or run `apt -f install` and then `apt -y full-upgrade` once again.

12.2.1   Upgrading the main server

- Start by making sure the current system is up-to-date:

```
apt update
apt full-upgrade
```

- Cleanup the package cache:

```
apt-get clean
```

- Prepare and start the upgrade to Stretch:

```
# First, adjust for a changed profile name:
sed -i 's/Thin-Client-Server/LTSP-Server/' /etc/debian-edu/config
# Then it's best to use the new default mirror:
sed -i 's/http.debian.net/deb.debian.org/g' /etc/apt/sources.list
# Finally, replace jessie with stretch.
sed -i 's/jessie/stretch/g' /etc/apt/sources.list
apt update
apt full-upgrade
```

- apt-list-changes: be prepared for a lot of NEWS to read; press <return> to scroll down, <q> to leave the pager.
- Read all debconf information carefully, choose 'keep your currently-installed version' unless stated differently below; in most cases hitting return will be fine.
- You will see some prompts about package configurations:
  - icinga-cgi: Provide icingaadmin's password (same as used for nagiosadmin).
  - Just in case several display managers are installed: display-manager: Choose `lightdm`.
  - Configuring Kerberos Authentication: Enter `kerberos` as hostname.
  - Configuring icinga-common: Use external commands with Icinga: Choose <Yes>.
  - tftp (etc/inetd.conf): Choose <Yes>. (See atftpd bug 789667)
  - /etc/default/ldap2zone: Choose Y.
  - /etc/gosa/gosa.conf: Choose N. (Never accept a new gosa.conf version!)
- Cope with the Squid3 to Squid renaming:

```
service squid stop             # This usually takes some time!
rm -rf /var/spool/squid
umount /var/spool/squid3
sed -i 's#spool/squid3#spool/squid#' /etc/fstab
mv /var/spool/squid3 /var/spool/squid
mount -a
rm /etc/squid3 -rf
rm /etc/default/squid3 -rf
```

- Modify LDAP to use the fully qualified domain name (FQDN) for sudo:

```
ldapvi -ZD '(cn=admin)'
(Enter root password.)
Search for 'sudoHost :tjener', replace 'tjener' with 'tjener.intern'
(Enter 'y' to modify the LDAP data base.)
```

- Apply and adjust configuration:

```
service autofs stop
cfengine-debian-edu -D installation
rm /etc/apache2/conf-enabled/nagios3.conf
a2dismod userdir
ln -s /etc/apache2/mods-available/userdir.load /etc/apache2/mods-available/debian-edu- ↩
    userdir.load
a2enmod debian-edu-userdir
sed -i 's/udp4/udp/' /etc/inetd.conf   # Debian Bug #789667 (atftpd)
service squid start
service apache2 restart
```

- Install renamed metapackages:

```
apt update
apt install education-networked-common
apt install education-ltsp-server       # Only if profile 'LTSP-Server' is installed.
```

- Get the new Debian Edu Stretch artwork:

```
apt install debian-edu-artwork-softwaves
```

- If the upgraded system fails to boot on qemu/kvm, see 844446. Changing the architecture away from Broadwell in QEMU might help.
- After reboot, do some more cleanup:

```
apt purge linux-image-3.16.0-4-amd64
apt purge debian-edu-artwork-lines       # Only if not wanted as an alternative theme.
dpkg -P php5-imagick                      # Package might not be installed in all cases.
rm -rf /etc/php5
```

- Enable otherwise broken PHP 7.0 support:

```
a2enmod php7.0
service apache2 restart
```

- Check if the upgraded system works:

Reboot; log in as first user and test

- if the GOsa[2] gui is working,

- if one is able to connect LTSP clients and workstations,

- if one can add/remove a netgroup membership of a system,

- if one can send and receive internal email,

- if one can manage printers,

- and if other site specific things are working.

12.2.2   Upgrading a workstation

Do all the basic things like on the main-server and without doing the things not needed. And then do this in addition.

- To enable LDAP connection, renew the server certificate:

```
rm /etc/ldap/ssl/ldap-server-pubkey.pem
service nslcd stop
service fetch-ldap-cert restart
service nslcd start
```

12.2.3   Upgrading LTSP chroots (default arch i386)

Make sure you have enough disk space. LTSP now uses Network Block Device (NBD). The NBD image file size is about 4 GiB (default installation). If the image is updated, another 4 GiB for a temporary file are needed.

```
ltsp-chroot -m -a i386 apt update
ltsp-chroot -m -a i386 apt -y full-upgrade
sed -i 's/jessie/stretch/g' /opt/ltsp/i386/etc/apt/sources.list
ltsp-chroot -m -a i386 apt update
ltsp-chroot -m -a i386 apt -y full-upgrade
ltsp-chroot -m -a i386 apt -f install
ltsp-chroot -m -a i386 apt -y full-upgrade
```

- Cleaning up:

```
ltsp-chroot -m -a i386 apt --purge autoremove
```

- Update LTSP support on the server side:

```
ltsp-update-kernels
ltsp-update-sshkeys
ltsp-update-image
```

To save disk space, `ltsp-update-image -n` could be used instead; see `man ltsp-update-image`.

12.2.4 Recreating an LTSP chroot

On the LTSP server(s) the LTSP chroot could also be recreated. The new chroot will still support both thin-clients and diskless workstations.

Remove `/opt/ltsp/i386` (or `/opt/ltsp/amd64`, depending on your setup). If you have enough diskspace, consider backing it up.

Recreate the chroot by running `debian-edu-ltsp --arch i386` (or `debian-edu-ltsp --arch amd64`) as root.

12.3 Upgrades from older Debian Edu / Skolelinux installations (before Jessie)

To upgrade from any older release, you will need to upgrade to the Jessie based Debian Edu release first, before you can follow the instructions provided above. Instructions are given in the Manual for Debian Edu Jessie about how to upgrade to Jessie from the previous release, Wheezy. Likewise the Wheezy manual describes how to upgrade from Squeeze.

13 HowTo

- HowTos for general administration
- HowTos for advanced administration
- HowTos for the desktop
- HowTos for networked clients
- HowTos for Samba
- HowTos for teaching and learning
- HowTos for users

14 HowTos for general administration

The Getting Started and Maintenance chapters describe how to get started with Debian Edu and how to do the basic maintenance work. The howtos in this chapter have some more "advanced" tips and tricks.

14.1   Configuration history: tracking /etc/ using the git version control system

With the introduction of `etckeeper` in Debian Edu Squeeze (previous versions used `etcinsvk` which was removed from Debian), all files in /etc/ are tracked using [git] as a version control system.

This makes it possible to see when a file is added, changed and removed, as well as what was changed if the file is a text file. The git repository is stored in /etc/.git/.

Every hour, any changes are automatically recorded, allowing configuration history to be extracted and reviewed.

To look at the history, the command `etckeeper vcs log` is used. To check the differences between two points in time, a command like `etckeeper vcs diff` can be used.

See the output of `man etckeeper` for more information.

List of useful commands:

```
etckeeper vcs log
etckeeper vcs status
etckeeper vcs diff
etckeeper vcs add .
etckeeper vcs commit -a
man etckeeper
```

14.1.1   Usage examples

On a freshly installed system, try this to see all changes done since the system was installed:

```
etckeeper vcs log
```

See which files are currently not tracked and which are not up-to-date:

```
etckeeper vcs status
```

To manually commit a file, because you don't want to wait up to an hour:

```
etckeeper vcs commit -a /etc/resolv.conf
```

14.2   Resizing Partitions

In Debian Edu, all partitions other than the /boot/ partition are on logical LVM volumes. With Linux kernels since version 2.6.10, it is possible to extend partitions while they are mounted. Shrinking partitions still needs to happen while the partition is unmounted.

It is a good idea to avoid creating very large partitions (over, say, 20GiB), because of the time it takes to run `fsck` on them or to restore them from backup if the need arises. It is better, if possible, to create several smaller partitions than one very large one.

The helper script `debian-edu-fsautoresize` is provided to make it easier to extend full partitions. When invoked, it reads the configuration from /usr/share/debian-edu-config/fsautoresizetab, /site/etc/fsautoresizetab and /etc/fsautoresizetab. It then proposes to extend partitions with too little free space, according to the rules provided in these files. If run with no arguments, it will only show the commands needed to extend the file system. The argument -n is needed to actually execute these commands to extend the file systems.

The script is executed automatically every hour on every client listed in the `fsautoresize-hosts` netgroup.

When the partition used by the Squid proxy is resized, the value for cache size in `etc/squid/squid.conf` needs to be updated as well. The helper script `/usr/share/debian-edu-config/tools/squid-update-cachedir` is provided to do this automatically, checking the current partition size of `/var/spool/squid/` and configuring Squid to use 80% of this as its cache size.

14.2.1   Logical Volume Management

Logical Volume Management (LVM) enables resizing the partitions while they are mounted and in use. You can learn more about LVM from the [LVM HowTo](#).

To extend a logical volume manually you simply tell the `lvextend` command how large you want it to grow to. For example, to extend home0 to 30GiB you use the following commands:

```
lvextend -L30G /dev/vg_system/skole+tjener+home0
resize2fs /dev/vg_system/skole+tjener+home0
```

To extend home0 by additional 30GiB, you insert a '+' (-L+30G)

14.3   Installing a graphical environment on the main-server to use GOsa²

If you (probably accidentally) installed a pure main-server profile and don't have a client with a web-browser handy, it's easy to install a minimal desktop on the main server using this command sequence in a (non-graphical) shell as the user you created during the main server's installation (first user):

```
  $ sudo apt-get update
  $ sudo apt-get install gnome-session gnome-terminal firefox-esr xorg
  # after installation, start a graphical session for the first user
  $ startx
```

14.4   Using ldapvi

[ldapvi](#) is a tool to edit the LDAP database with a normal text editor on the commandline.

The following needs to be executed:

```
ldapvi --ldap-conf -ZD '(cn=admin)'
```

Note: `ldapvi` will use whatever is the default editor. By executing `export EDITOR=vim` in the shell prompt one can configure the environment to get a vi clone as editor.

To add an LDAP object using ldapvi, use object sequence number with the string `add` in front of the new LDAP object.

⚠ Warning: `ldapvi` is a very powerful tool. Be careful and don't mess up the LDAP database, same warning applies for JXplorer.

14.5   JXplorer, an LDAP GUI

If you prefer a GUI to work with the LDAP database, check out the `jxplorer` package, which is installed by default. To get write access connect like this:

```
host: ldap.intern
port:636
Base dn:dc=skole,dc=skolelinux,dc=no
Security level: ssl + user + password
User dn: cn=admin,ou=ldap-access

Click "This session only" if asked for the certificate.
```

14.6 ldap-createuser-krb, a command-line tool

`ldap-createuser-krb` is a small command line tool to create LDAP users and set their passwords in Kerberos. It's mostly useful for testing, though.

14.7 Using stable-updates

Since the Squeeze release in 2011, Debian has included packages formerly maintained in volatile.debian.org in the stable-updates suite.

While you can use stable-updates directly, you don't have to: stable-updates are pushed into the stable suite regularly when stable point releases are done, which roughly happens every two months.

14.8 Using backports to install newer software

You are running Debian Edu because you prefer the stability of Debian Edu. It runs great; there is just one problem: sometimes software is a little bit more outdated than you like. This is where backports.debian.org steps in.

Backports are recompiled packages from Debian testing (mostly) and Debian unstable (in a few cases only, e.g. security updates), so they will run without new libraries (wherever this is possible) on a stable Debian distribution like Debian Edu. **We recommend you to pick out individual backports which fit your needs, and not to use all backports available there.**

Using backports is simple:

```
echo "deb http://deb.debian.org/debian/ stretch-backports main" >> /etc/apt/sources.list
apt-get update
```

After which one can install backported packages easily, the following command will install a backported version of *tuxtype*:

```
apt-get install -t stretch-backports tuxtype
```

Backports are automatically updated (if available) just like other packages. Like the normal archive, backports has three sections: main, contrib and non-free.

14.9 Upgrading with a CD or similar image

If you want to upgrade from one version to another (for example from Stretch 9.1+edu0 to 9.3+edu1) but you do not have Internet connectivity, only physical media, follow these steps:

Insert the CD / DVD / Blu-ray disc / USB flash drive, mount it and use the apt-cdrom command:

```
mount /media/cdrom
apt-cdrom add -m
```

To quote the apt-cdrom(8) man page:

- apt-cdrom is used to add a new CD-ROM to APTs list of available sources. apt-cdrom takes care of determining the structure of the disc as well as correcting for several possible mis-burns and verifying the index files.

- It is necessary to use apt-cdrom to add CDs to the APT system, it cannot be done by hand. Furthermore each disk in a multi-CD set must be inserted and scanned separately to account for possible mis-burns.

Then run these two commands to upgrade the system:

```
apt-get update
apt-get upgrade
```

14.10   Automatic cleanup of leftover processes

`killer` is a perl script that gets rid of background jobs. Background jobs are defined as processes that belong to users who are not currently logged into the machine. It's run by cron job once an hour.

To install it run the following command as root:

```
 apt-get install killer
```

14.11   Automatic installation of security upgrades

`unattended-upgrades` is a Debian package which will install security (and other) upgrades automatically. The package is installed by default and preconfigured to install security upgrades. The logs are available in `/var/log/unattended-upgrades/`; also, there are always `/var/log/dpkg.log` and `/var/log/apt/`.

14.12   Automatic shutdown of machines during the night

It is possible to save energy and money by automatically turning client machines off at night and back on in the morning. The package will try to turn off the machine every hour on the hour from 16:00 in the afternoon, but will not turn it off if it seems to have users. It will try to tell the BIOS to turn on the machine around 07:00 in the morning, and the main-server will try to turn on machines from 06:30 by sending wake-on-lan packets. These times can be changed in the crontabs of individual machines.

Some considerations should be kept in mind when setting this up:

- The clients should not be shut down when someone is using them. This is ensured by checking the output from `who`, and as a special case, checking for the LDM ssh connection command to work with LTSP thin clients.

- To avoid blowing electrical fuses, it is a good idea to make sure all clients do not start at the same time.

- There are two different methods available to wake up clients. One uses a BIOS feature and requires a working and correct hardware clock, as well as a motherboard and BIOS version supported by `nvram-wakeup`; the other requires clients to have support for wake-on-lan, and the server to know about all the clients that need to be woken up.

14.12.1 How to set up shutdown-at-night

On clients that should turn off at night, touch /etc/shutdown-at-night/shutdown-at-night, or add the hostname (that is, the output from 'uname -n' on the client) to the netgroup "shutdown-at-night-hosts". Adding hosts to the netgroup in LDAP can be done using the GOsa² web tool. The clients might need to have wake-on-lan configured in the BIOS. It is also important that the switches and routers used between the wake-on-lan server and the clients will pass the WOL packets to the clients even if the clients are turned off. Some switches fail to pass on packets to clients that are missing in the ARP table on the switch, and this blocks the WOL packets.

To enable wake-on-lan on the server, add the clients to /etc/shutdown-at-night/clients, with one line per client, IP address first, followed by MAC address (ethernet address), separated by a space; or create a script /etc/shutdown-at-night/clients to generate the list of clients on the fly.

Here is an example /etc/shutdown-at-night/clients-generator for use with sitesummary:

```
#!/bin/sh
PATH=/usr/sbin:$PATH
export PATH
sitesummary-nodes -w
```

An alternative if the netgroup is used to activate shutdown-at-night on clients is this script using the netgroup tool from the ng-utils package:

```
#!/bin/sh
PATH=/usr/sbin:$PATH
export PATH
netgroup -h shutdown-at-night-hosts
```

14.13 Access Debian-Edu servers located behind a firewall

To access machines behind a firewall from the Internet, consider installing the package autossh. It can be used to set up an SSH tunnel to a machine on the Internet that you have access to. From that machine, you can access the server behind the firewall via the SSH tunnel.

14.14 Installing additional service machines for spreading the load from main-server

In the default installation, all services are running on the main-server, tjener. To simplify moving some to another machine, there is a *minimal* installation profile available. Installing with this profile will lead to a machine, which is part of the Debian Edu network, but which doesn't have any services running (yet).

These are the required steps to setup a machine dedicated to some services:

- install the *minimal* profile using the *debian-edu-expert* boot-option
- install the packages for the service
- configure the service
- disable the service on main-server
- update DNS (via LDAP/GOsa²) on main-server

14.15   HowTos from wiki.debian.org

FIXME: The HowTos from http://wiki.debian.org/DebianEdu/HowTo/ are either user- or developer-specific. Let's move the user-specific HowTos over here (and delete them over there)! (But first ask the authors (see the history of those pages to find them) if they are fine with moving the howto and putting it under the GPL.)

- http://wiki.debian.org/DebianEdu/HowTo/AutoNetRespawn

- http://wiki.debian.org/DebianEdu/HowTo/BackupPC

- http://wiki.debian.org/DebianEdu/HowTo/ChangeIpSubnet

- http://wiki.debian.org/DebianEdu/HowTo/SiteSummary

- http://wiki.debian.org/DebianEdu/HowTo/Squid_LDAP_Authentication

15   Advanced administration howto

In this chapter advanced administration tasks are described.

15.1   User Customisations with GOsa²

15.1.1   Create Users in Year Groups

In this example we want to create users in year groups, with common home directories for each group (home0/2014, home0/2015, etc). We want to create the users by csv import.

(as root on the main server)

- Make the necessary year group directories

mkdir /skole/tjener/home0/2014

(as superuser in Gosa)

- Department

Main menu: goto 'Directory structure', click the 'Students' department. The 'Base' field should show '/Students'. From the drop box 'Actions' choose 'Create'/'Department'. Fill in values for Name (2014) and Description fields (students graduating in 2014), leave the Base field as is (should be '/Students'). Save it clicking 'Ok'. Now the new department (2014) should show up below /Students. Click it.

- Group

Choose 'Groups' from the main menu; 'Actions'/Create/Group. Enter group name (leave 'Base' as is, should be /Students/2014) and click the check box left of 'Samba group'. 'Ok' to save it.

- Template

Choose 'users' from the main menu. Change to 'Students' in the Base field. An Entry `NewStudent` should show up, click it. This is the 'students' template, not a real user. As you'll have to create such a template (to be able to use csv import for your structure) based on this one, notice all entries showing up in the Generic, POSIX and Samba tabs, maybe take screenshots to have information ready for the new template.

Now change to /Students/2014 in the Base field; choose Create/Template and start to fill in your desired values, first the Generic tab (add your new 2014 group under Group Membership, too), then add POSIX and Samba account.

- Import users

Choose your new template when doing csv import; testing it with a few users is recommended.

15.2   Other User Customisations

15.2.1   Creating folders in the home directories of all users

With this script the administrator can create a folder in each user's home directory and set access permissions and ownership.

In the example shown below with group=teachers and permissions=2770 a user can hand in an assignment by saving the file to the folder "assignments" where teachers are given write access to be able to make comments.

```
#!/bin/bash
home_path="/skole/tjener/home0"
shared_folder="assignments"
permissions="2770"
created_dir=0
for home in $(ls $home_path); do
   if [ ! -d "$home_path/$home/$shared_folder" ]; then
       mkdir $home_path/$home/$shared_folder
       chmod $permissions $home_path/$home/$shared_folder
       #set the right owner and group
       #"username" = "group name" = "folder name"
       user=$home
       group=teachers
       chown $user:$group $home_path/$home/$shared_folder
       ((created_dir+=1))
   else
       echo -e "the folder $home_path/$home/$shared_folder already exists.\n"
   fi
done
echo "$created_dir folders have been created"
```

15.2.2   Easy access to USB drives and CD-ROMs/DVDs

When users insert a USB drive or a DVD / CD-ROM into a (diskless) workstation, a popup window appears asking what to do with it, just like in any other normal installation.

When users insert a USB drive or a DVD / CD-ROM into a thin client there is only a notify-window showing up for a few seconds. The media is automatically mounted and it is possible to access it browsing to the /media/$user folder. This is quite difficult for many non experienced users.

It is possible to have the default KDE "Plasma" file manager Dolphin showing up if KDE "Plasma" (or LDXE, if installed in parallel to KDE "Plasma") is in use as desktop environment. To configure this, simply execute `/usr/share/debian-edu-config/l` `enable` on the terminal server. (When using GNOME, device icons will be placed on the desktop allowing easy access).

In addition the following script could be used to create the symlink "media" for all users in their home folder for easy access to USB drives, CD-ROM / DVD or whatever media is connected to the thin client. This might come in handy if users want to edit files directly on their plugged in media.

```
#!/bin/bash
home_path="/skole/tjener/home0"
shared_folder="media"
permissions="775"
created_dir=0;
for home in $(ls $home_path); do
   if [ ! -d "$home_path/$home/$shared_folder" ]; then
       ln -s /media/$home $home_path/$home/$shared_folder
       ((created_dir+=1))
   else
       echo -e "the folder $home_path/$home/$shared_folder already exists.\n"
```

```
    fi
done
echo "$created_dir folders has been created"
```

15.2.2.1 A warning about removable media on LTSP servers

⚠️ Warning: When inserted into an LTSP server USB drives and other removable media cause popup messages on remote LTSP clients.

If remote users acknowledge the popup or use pmount from the console, they can even mount the removable devices and access the files.

15.3 Use a dedicated storage server

Take these steps to set up a dedicated storage server for user home directories and possibly other data.

- Add a new system of type `server` using GOsa[2] as outlined in the Getting started chapter of this manual.

  - This example uses 'nas-server.intern' as the server name. Once 'nas-server.intern' is configured, check if the NFS export points on the new storage server are exported to the relevant subnets or machines:

    ```
    root@tjener:~# showmount -e nas-server
    Export list for nas-server:
    /storage         10.0.0.0/8
    root@tjener:~#
    ```

    Here everything on the backbone network is granted access to the /storage export. (This could be restricted to netgroup membership or single IP addresses to limit NFS access like it is done in the tjener:/etc/exports file.)

- Add automount information about 'nas-server.intern' in LDAP to allow all clients to automatically mount the new export on request.

  - This can't be done using GOsa[2], because a module for automount is missing. Instead, use ldapvi and add the required LDAP objects using an editor.

    ```
    ldapvi --ldap-conf -ZD '(cn=admin)' -b ou=automount,dc=skole,dc=skolelinux,dc=no
    ```

    When the editor shows up, add the following LDAP objects at the bottom of the document. (The "/&" part in the last LDAP object is a wild card matching everything 'nas-server.intern' exports, removing the need to list individual mount points in LDAP.)

    ```
    add cn=nas-server,ou=auto.skole,ou=automount,dc=skole,dc=skolelinux,dc=no
    objectClass: automount
    cn: nas-server
    automountInformation: -fstype=autofs --timeout=60 ldap:ou=auto.nas-server,ou= ←
        automount,dc=skole,dc=skolelinux,dc=no

    add ou=auto.nas-server,ou=automount,dc=skole,dc=skolelinux,dc=no
    objectClass: top
    objectClass: automountMap
    ou: auto.nas-server

    add cn=/,ou=auto.nas-server,ou=automount,dc=skole,dc=skolelinux,dc=no
    objectClass: automount
    cn: /
    automountInformation: -fstype=nfs,tcp,rsize=32768,wsize=32768,rw,intr,hard,nodev, ←
        nosuid,noatime nas-server.intern:/&
    ```

- Add the relevant entries in tjener.intern:/etc/fstab, because tjener.intern does not use automount to avoid mounting loops:

  - Create the mount point directories using `mkdir`, edit '/etc/fstab' as adequate and run `mount -a` to mount the new resources.

- Enable access in case diskless workstations are used. This is a special case, because sshfs is used instead of NFS and automount:

  - Create the mount point directories in the LTSP diskless client's root (default `/opt/ltsp/i386/`) as well.
    Add a line containing 'LOCAL_APPS_EXTRAMOUNTS=/storage' to `/opt/ltsp/i386/etc/lts.conf` (example).
    Create a link in each user's home dir like 'ln -s /storage Storage' to help users find the resources.

Now users should be able to access the files on 'nas-server.intern' directly by just visiting the '/tjener/nas-server/storage/' directory using any application on any workstation, LTSP thin client or LTSP server, and visiting ~/Storage in case an LTSP diskless client is used.

15.4   Restrict ssh login access

There are several ways to restrict ssh login, some are listed here.

15.4.1   Setup without LTSP clients

If no LTSP clients are used a simple solution is to create a new group (say `sshusers`) and to add a line to the machine's /etc/ssh/sshd_config file. Only members of the `sshusers` group will then be allowed to ssh into the machine from everywhere.

Managing this case with GOsa is quite simple:

- Create a group `sshusers` on the base level (where already other system management related groups like `gosa-admins` show up).

- Add users to the new group `sshusers`.

- Add `AllowGroups sshusers` to /etc/ssh/sshd_config.

- Execute `service ssh restart`.

15.4.2   Setup with LTSP clients

The default LTSP client setup uses ssh connections to the LTSP server. So a different approach using PAM is needed.

- Enable pam_access.so in the LTSP server's /etc/pam.d/sshd file.

- Configure /etc/security/access.conf to allow connections for (sample) users alice, jane, bob and john from everywhere and for all other users only from the internal networks by adding these lines:

```
+ : alice jane bob john : ALL
+ : ALL : 10.0.0.0/8 192.168.0.0/24 192.168.1.0/24
- : ALL : ALL
#
```

If only dedicated LTSP servers are used, the 10.0.0.0/8 network could be dropped to disable internal ssh login access. Note: someone connecting his box to the dedicated LTSP client network(s) will gain ssh access to the LTSP server(s) as well.

15.4.3 A note for more complex setups

If LTSP clients were attached to the backbone network 10.0.0.0/8 (combi server or LTSP cluster setup) things would be even more complicated and maybe only a sophisticated DHCP setup (in LDAP) checking the vendor-class-identifier together with appropriate PAM configuration would allow to disable internal ssh login.

16 HowTos for the desktop

16.1 Using KDE Plasma, GNOME, LXDE, Xfce and/or MATE together

To install other desktop environments after installation, simply use apt:

```
apt update
apt install education-desktop-gnome education-desktop-lxde education-desktop-xfce  ←
    education-desktop-mate
```

Users will then be able to choose any of the five desktop environment via the login manager before logging in. Of course, you can also choose to give less choices. Keep in mind that there will be several programs for the same purpose (like file managers, editors, PDF viewers...) if more than one desktop environment is installed; this might confuse users.

The use of LXDE as default on thin clients can be forced; see networked clients for details.

If you don't want to do installations with the default desktop KDE Plasma, you can also install with one of the four alternative desktops, GNOME, LXDE, Xfce or MATE directly.

16.2 Flash

The free software flash-player `gnash` is installed by default. Please note that Firefox ESR will drop Flash support early 2018.

16.3 Playing DVDs

libdvdcss is needed for playing most commercial DVDs. For legal reasons it's not included in Debian (Edu). If you are legally allowed to use it, you can build your own local packages using the `libdvd-pkg` Debian package; make sure `contrib` is enabled in `/etc/apt/sources.list`.

```
apt update
apt install libdvd-pkg
```

Answer the debconf questions, then run `dpkg-reconfigure libdvd-pkg`.

16.4 Handwriting fonts

The package `fonts-linex` (which is installed by default) installs the font "Abecedario" which is a nice handwriting font for kids. The font has several forms to be used with kids: dotted, and with lines.

17 HowTos for networked clients

17.1 Introduction to thin clients and diskless workstations

One generic term for both thin clients and diskless workstations is *LTSP client*. LTSP is the Linux Terminal Server Project.

Thin client

A thin client setup enables an ordinary PC to function as an (X-)terminal, where all software runs on the LTSP server. This means that this machine boots from a diskette or directly from the server using network-PROM (or PXE) without using a local client hard drive.

Diskless workstation

A diskless workstation runs all software locally. The client machines boot directly from the LTSP server without a local hard drive. Software is administered and maintained on the LTSP server (inside of the LTSP chroot), but it runs on the diskless workstation. Home directories and system settings are stored on the server too. Diskless workstations are an excellent way of reusing older (but powerful) hardware with the same low maintenance cost as with thin clients.

LTSP defines 320MB as the default minimum amount of RAM for diskless workstations. If the amount of RAM is less, the machine will boot as thin client. The related LTSP parameter is `FAT_RAM_THRESHOLD` with the default value 300. So if (for example) the clients should only boot as diskless workstations if they have 1 GB RAM, add `FAT_RAM_THRESHOLD=1000` to lts.conf (or set this in LDAP). Unlike workstations diskless workstations run without any need to add them with GOsa[2], because LDM is used to login and connect to the LTSP server.

LTSP client firmware

LTSP client boot will fail if the client's network interface requires a non-free firmware. A PXE installation can be used for troubleshooting problems with netbooting a machine; if the Debian Installer complains about a missing XXX.bin file then non-free firmware has to be added to the initrd used by LTSP clients.

In this case execute the following commands on an LTSP server.

```
# First get information about firmware packages
apt-get update && apt-cache search ^firmware-

# Decide which package has to be installed for the network interface(s).
# Most probably this will be firmware-linux-nonfree.
# Things have to take effect in the LTSP chroot for architecture i386.
ltsp-chroot -a i386 apt-get update
ltsp-chroot -d -a i386 apt-get -y -q install <package name>

# copy the new initrd to the server's tftpboot directory and update the NBD image.
ltsp-update-kernels
ltsp-update-image
```

As a shorter alternative -- installing all available firmware and updating the tftpboot directory -- you could execute:

```
/usr/share/debian-edu-config/tools/ltsp-addfirmware
```

17.1.1 LTSP client type selection

Each LTSP server has two ethernet interfaces: one configured in the main 10.0.0.0/8 subnet (which is shared with the main server), and another forming a local 192.168.0.0/24 subnet (a separate subnet for each LTSP server).

On the main subnet the complete PXE menu is provided; the separate subnet for each LTSP server allows only diskless and thin LTSP client selection.

Using the default PXE menu on the main subnet 10.0.0.0/8, a machine could be started as diskless workstation or thin client. By default clients in the separate subnet 192.168.0.0/24 will run as diskless workstations if the amount of RAM is sufficient. If all clients in this LTSP client subnet should run as thin clients, the following has to be done.

```
(1) Open the file /opt/ltsp/i386/etc/ltsp/update-kernels.conf with an editor
and replace the line
CMDLINE_LINUX_DEFAULT="init=/sbin/init-ltsp quiet"
with
CMDLINE_LINUX_DEFAULT="init=/sbin/init-ltsp LTSP_FATCLIENT=False quiet"
(2) Execute 'ltsp-chroot -a i386 /usr/share/ltsp/update-kernels'
(3) Execute 'ltsp-update-kernels'
(4) Execute 'ltsp-update-image'
```

17.2 Configuring the PXE menu

The PXE configuration is generated using the script debian-edu-pxeinstall. It allows some settings to be overridden by adding a file /etc/debian-edu/pxeinstall.conf with replacement values.

17.2.1 Configuring the PXE installation

The PXE installation option is by default available to anyone able to PXE boot a machine. To password protect the PXE installation options, a file /var/lib/tftpboot/menupassword.cfg can be created with content similar to this:

```
MENU PASSWD $4$NDk0OTUzNTQ1NTQ5$7d6KvAlVCJKRKcijtVSPfveuWPM$
```

The password hash should be replaced with an MD5 hash for the desired password.

The PXE installation will inherit the language, keyboard layout and mirror settings from the settings used when installing the main-server, and the other questions will be asked during installation (profile, popcon participation, partitioning and root password). To avoid these questions, the file /etc/debian-edu/www/debian-edu-install.dat can be modified to provide preselected answers to debconf values. Some examples of available debconf values are already commented in /etc/debian-edu/www/debian-edu-install.dat. Your changes will be lost as soon as debian-edu-pxeinstall is used to recreate the PXE-installation environment. To append debconf values to /etc/debian-edu/www/debian-edu-install.dat during recreation with debian-edu-pxeinstall, add the file /etc/debian-edu/www/debian-edu-install.dat.local with your additional debconf values.

More information about modifying PXE installations can be found in the Installation chapter.

17.2.2 Adding a custom repository for PXE installations

For adding a custom repository add something like this to /etc/debian-edu/www/debian-edu-install.dat.local:

```
#add the skole projects local repository
d-i     apt-setup/local1/repository string      http://example.org/debian stable main ←
   contrib non-free
d-i     apt-setup/local1/comment string         Example Software Repository
d-i     apt-setup/local1/source boolean         true
d-i     apt-setup/local1/key    string          http://example.org/key.asc
```

and then run /usr/sbin/debian-edu-pxeinstall once.

17.2.3   Changing the PXE menu on a combined (main and LTSP) server

The PXE menu allows network booting of LTSP clients, the installer and other alternatives. The file `/var/lib/tftpboot/pxelinux` is used by default if no other file in that directory matches the client, and out of the box it is set to link to `/var/lib/tftpboot/debia`

If all clients should boot as diskless workstations instead of getting the full PXE menu, this can be implemented by changing the symlink:

```
ln -s /var/lib/tftpboot/debian-edu/default-diskless.cfg /var/lib/tftpboot/pxelinux.cfg/ ←
    default
```

If all clients should boot as thin clients instead, change the symlink like this:

```
ln -s /var/lib/tftpboot/debian-edu/default-thin.cfg /var/lib/tftpboot/pxelinux.cfg/default
```

See also the PXELINUX documentation at http://syslinux.zytor.com/wiki/index.php/PXELINUX .

17.2.4   Separate main and LTSP server

For performance and security considerations it might be desired to set up a separate main server which doesn't act as LTSP server.

To have ltspserver00 serve diskless workstations on the main (10.0.0.0/8) network, when the main server is not a combined server, follow these steps:

- copy the `ltsp` directory from `/var/lib/tftpboot` on ltspserver00 to the same directory on the main server.
- copy `/var/lib/tftpboot/debian-edu/default-diskless.cfg` to the same directory on the main server.
- edit `/var/lib/tftpboot/debian-edu/default-diskless.cfg` to use the IP address of ltspserver00; the following example uses 10.0.2.10 for the IP address of ltspserver00 on the main network:

```
 DEFAULT ltsp/i386/vmlinuz initrd=ltsp/i386/initrd.img nfsroot=10.0.2.10:/opt/ltsp/i386  ←
     init=/sbin/init-ltsp boot=nfs ro quiet ipappend 2
```

- set the symlink in `/var/lib/tftpboot/pxelinux.cfg` on the main server to point to `/var/lib/tftpboot/debian-edu/defa`

As an alternative, you could use `ldapvi`, search for 'next server tjener' and replace tjener with ltspserver00.

17.2.5   Use a different LTSP client network

192.168.0.0/24 is the default LTSP client network if a machine is installed using the LTSP profile. If lots of LTSP clients are used or if different LTSP servers should serve both i386 and amd64 chroot environments the second preconfigured network 192.168.1.0/24 could be used as well. Edit the file `/etc/network/interfaces` and adjust the eth1 settings accordingly. Use `ldapvi` or any other LDAP editor to inspect DNS and DHCP configuration.

17.3   Changing network settings

The debian-edu-config package comes with a tool which helps in changing the network from 10.0.0.0/8 to something else. Have a look at /usr/share/debian-edu-config/tools/subnet-change. It is intended for use just after installation on the main server, to update LDAP and other files that need to be edited to change the subnet.

⚠️ Note that changing to one of the subnets already used elsewhere in Debian Edu will not work. 192.168.0.0/24 and 192.168.1.0/24 are already set up as LTSP client networks. Changing to these subnets will require manual editing of configuration files to remove duplicate entries.

There is no easy way to change the DNS domain name. Changing it would require changes to both the LDAP structure and several files in the main server file system. There is also no easy way to change the host and DNS name of the main server (tjener.intern). To do so would also require changes to LDAP and files in the main-server and client file system. In both cases the Kerberos setup would have to be changed, too.

17.4   LTSP in detail

17.4.1   LTSP client configuration in LDAP (and lts.conf)

To configure specific thin clients with particular features, you can add settings in LDAP or edit the file /opt/ltsp/i386/etc/lts.co Please note that ltsp-update-image has to be run after each change to lts.conf. The image update isn't needed if lts.conf is copied to the /var/lib/tftpboot/ltsp/i386/ directory.

⚠️ We recommend to configure clients in LDAP (and not edit lts.conf directly, however, configuration webforms for LTSP are currently not available in GOsa², you have to use a plain LDAP browser/explorer or ldapvi), as this makes it possible to add and/or replace LTSP servers without loosing (or having to redo) configuration.

The default values in LDAP are defined in the cn=ltspConfigDefault,ou=ltsp,dc=skole,dc=skolelinux,dc=no LDAP object using the ltspConfig attribute. One can also add host specific entries in LDAP.

Run man lts.conf to have a look at available configuration options (see /usr/share/doc/ltsp/LTSPManual.html for detailed information about LTSP).

The default values are defined under [default]; to configure one client, specify it in terms of its MAC address or IP address like this: [192.168.0.10].

Example: To make the thin client ltsp010 use 1280x1024 resolution, add something like this:

```
[192.168.0.10]
X_MODE_0 = 1280x1024
X_HORZSYNC = "60-70"
X_VERTREFRESH = "59-62"
```

somewhere below the default settings.

To force the use of a specific xserver on an LTSP client, set the XSERVER variable. For example:

```
[192.168.0.11]
XSERVER = nvidia
```

If a thin client comes up with a black screen the use of a specific color depth might help. For example:

```
[192.168.0.12]
X_COLOR_DEPTH=16
```

Depending on what changes you make, it may be necessary to restart the client.

To use IP addresses in lts.conf you need to add the client MAC address to your DHCP server. Otherwise you should use the client MAC address directly in your lts.conf file.

17.4.2   Force all thin clients to use LXDE as default desktop environment

Make sure that LXDE is installed on the LTSP server; then add these lines below [default] in "lts.conf":

```
LDM_SESSION=LXDE
LDM_FORCE_SESSION=true
```

17.4.3   Load-balancing LTSP servers

17.4.3.1   Part 1

It is possible to set up the clients to connect to one of several LTSP servers for load-balancing. This is done by providing /opt/ltsp/i386/usr/share/ltsp/get_hosts as a script printing one or more servers for LDM to connect to. In addition to this, each LTSP chroot needs to include the SSH host key for each of the servers.

First of all, you must choose one LTSP server to be the load-balancing server. All the clients will PXE-boot from this server and load the Skolelinux image. After the image is loaded, LDM chooses which server to connect to by using the "get_hosts" script. You will decide later how this is done.

The load-balancing server must be announced to the clients as the "next-server" via DHCP. As DHCP configuration is in LDAP, modifications have to be done there. Use `ldapvi --ldap-conf -ZD '(cn=admin)'` to edit the appropriate entry in LDAP. (Enter the main server's root password at the prompt; if VISUAL isn't set, the default editor will be nano.) Search for a line reading `dhcpStatements: next-server tjener` Next-server should be the IP address or hostname of the server you chose to be the load-balancing server. If you use hostname you must have a working DNS. Remember to restart the DHCP service.

Now you have to move your clients from the 192.168.0.0 network to the 10.0.0.0 network; attach them to the backbone network instead of the network attached to the LTSP server's second network card. This is because when you use load-balancing, the clients need direct access to the server chosen by LDM. If you leave your clients on the 192.168.0.0 network, all of the clients' traffic will go through that server before it reaches the chosen LDM server.

17.4.3.2   Part 2

Now you have to make a "get_hosts" script which generates a list of server names for LDM to connect to. The parameter LDM_SERVER overrides this script. In consequence, this parameter must not be defined if the get_hosts is going to be used. The get_hosts script writes on the standard output each server IP address or host name, in random order.

Edit "/opt/ltsp/i386/etc/lts.conf" and add something like this:

```
MY_SERVER_LIST = "xxxx xxxx xxxx"
```

Replace xxxx with either the IP addresses or hostnames of the servers as a space-separated list. Then, put the following script in /opt/ltsp/i386/usr/lib/ltsp/get_hosts on the server you chose to be the load-balancing server.

```
#!/bin/bash
# Randomise the server list contained in MY_SERVER_LIST parameter
TMP_LIST=""
SHUFFLED_LIST=""
for i in $MY_SERVER_LIST; do
    rank=$RANDOM
    let "rank %= 100"
    TMP_LIST="$TMP_LIST\n${rank}_$i"
done
TMP_LIST=$(echo -e $TMP_LIST | sort)
for i in $TMP_LIST; do
```

```
      SHUFFLED_LIST="$SHUFFLED_LIST $(echo $i | cut -d_ -f2)"
done
echo $SHUFFLED_LIST
```

17.4.3.3 Part 3

Now that you've made the "get_hosts" script, it's time to make the SSH host key for the LTSP chroots. This can be done by making a file containing the content of `/opt/ltsp/i386/etc/ssh/ssh_known_hosts` from all the LTSP servers that will be load-balanced. Save this file as `/etc/ltsp/ssh_known_hosts.extra` on all load-balanced servers. The last step is very important because ltsp-update-sshkeys runs every time a server is booted, and `/etc/ltsp/ssh_known_hosts.extra` is included if it exists.

⚠ If you save your new host file as `/opt/ltsp/i386/etc/ssh/ssh_known_hosts`, it will be erased when you reboot the server.

There are some obvious weaknesses with this setup. All clients get their image from the same server, which causes high loads on the server if many clients are booted at the same time. Also, the clients require that server to be always available; without it they cannot boot or get an LDM server. Therefore this setup is very dependent on one server, which isn't very good.

Your clients should now be load-balanced!

17.4.4 Sound with LTSP clients

LTSP thin clients use networked audio to pass audio from the server to the clients.

LTSP diskless workstations handle audio locally.

17.4.5 Use printers attached to LTSP clients

- Attach the printer to the LTSP client machine (both USB and parallel port are supported).

- Configure this machine to run a printer in lts.conf (default location: `/opt/ltsp/i386/etc/lts.conf`), see the LTSP manual `/usr/share/doc/ltsp/LTSPManual.html#printer` for details.

- Configure the printer using the web interface `https://www:631` on the main server; choose network printer type `AppSocket/HP JetDirect` (for all printers regardless of brand or model) and set `socket://<LTSP client ip>:9100` as connection URI.

17.4.6 Upgrading the LTSP environment

It is useful to upgrade the LTSP environment with new packages fairly often, to make sure security fixes and improvements are made available. To upgrade, run these commands as user root on each LTSP server:

```
ltsp-chroot -a i386  # this does "chroot /opt/ltsp/i386" and more, ie it also prevents  ←
    daemons from being started
apt update
apt upgrade
apt full-upgrade
exit
ltsp-update-image
```

17.4.6.1 Installing additional software in the LTSP environment

To install additional software for an LTSP client you must perform the installation inside the chroot of the LTSP server.

```
ltsp-chroot -a i386
## optionally , edit the sources.list:
#editor /etc/apt/sources.list
apt update
apt install $new_package
exit
ltsp-update-image
```

17.4.7 Slow login and security

Skolelinux has added several security features on the client network preventing unauthorised superuser access, password sniffing, and other tricks which may be used on a local network. One such security measure is secure login using SSH, which is the default with LDM. This can slow down some client machines which are more than about fifteen years old, with as little as a 160 MHz processor and 32 MB RAM. Although it's not recommended, you can add a line to `/opt/ltsp/i386/etc/lts.conf` containing:

```
LDM_DIRECTX=True
```

⚠️ **Warning**: The above protects initial login, but all activities after that use unencrypted networked X. Passwords (except the initial one) will travel in cleartext over the network, as well as anything else.

Note: Since such fifteen-year-old thin clients may also have trouble running newer versions of LibreOffice and Firefox due to pixmap caching issues, you may consider running thin clients with at least 128 MB RAM, or upgrade the hardware, which will also give you the benefit of being able to use them as diskless workstations.

17.5 Connecting Windows machines to the network / Windows integration

17.5.1 Joining a domain

For Windows clients the Windows domain "SKOLELINUX" is available to be joined. A special service called Samba, installed on the main server, enables Windows clients to store profiles and user data, and also authenticates the users during the login.

⚠️ Joining a domain with a Windows client requires the steps described in the Debian Edu Stretch Samba Howto.

Windows will sync the profiles of domain users on every Windows login and logout. Depending on how much data is stored in the profile, this could take some time. To minimise the time needed, deactivate things like local cache in browsers (you can use the Squid proxy cache installed on the main server instead) and save files into the H: volume rather than under "My Documents".

17.5.1.1 User groups in Windows

If you want to check user groups on Windows, you need to download the tool `IFMEMBER.EXE` from Microsoft. Then you can use this for example in the logon script which resides on the main server in `/etc/samba/netlogon/LOGON.BAT`.

17.5.2 XP home

Users bringing in their XP laptops from home can still connect to the main server using their skolelinux credentials, provided the workgroup is set to SKOLELINUX. However, they may need to disable the Windows firewall before the main server will appear in Network Neighbourhood (or whatever it's called now).

17.5.3   Managing roaming profiles

Roaming profiles contain user work environments which include desktop items and settings. Examples include personal files, desktop icons and menus, screen colours, mouse settings, window size and position, application configurations, and network and printer connections. Roaming profiles are available wherever the user logs on, provided the server is available.

Since the profile is copied from the server to the machine during logon, and copied back to the server during logout, a large profile can make Windows login/logout painfully slow. There can be many reasons for a large profile, but the most common problem is that users save their files on the Windows desktop or in the "My Documents" folder instead of in their home directory. Also, some badly designed programs use the profile to store data and as scratch space.

The educational approach: one way to deal with overlarge profiles is to explain the situation to the users. Tell them not to store huge files on the desktop, and if they fail to listen, it's their own fault when login is slow.

Tweaking the profile: a different approach to dealing with the problem is to remove parts of the profile, and redirect other parts to regular file storage. This moves the workload from the users to the administrator, while adding complexity to the installation. There are at least three ways to edit the parts that are removed from the roaming profile.

17.5.3.1   Example smb.conf files for roaming profiles

FIXME: Maybe it is better to purge the examples. People who want to use roaming profiles should know what they are doing ...

⚠ **Note** The examples are outdated since in wheezy kerberos was configured for samba too!

You might find an example smb.conf in your preferred language delivered by the installation on the main server under `/usr/share/doc/debian-edu-config/examples/`. The source file is in English and is called `smb-roaming-profiles-en.conf`; look for a file with the appropriate code in the filename (the German translation, for example, will be named `smb-roaming-profiles` Inside the config file are a lot of explanations which you should have a look at.

17.5.3.2   Machine policies for roaming profiles

Machine policies can be edited and copied to all the other computers.

1. Pick a freshly installed Windows computer, and run `gpedit.msc`

2. Under the selection "User Configuration" -> "Administrative Templates" -> "System" -> "User Profiles" -> "Exclude directories in roaming profile", you can enter a semicolon-separated list of directories to exclude from the profile. The directories are internationalised and must be written in your own language the way they are in the profile. Examples of directories to exclude are:

   - log
   - Locale settings
   - Temporary Internet Files
   - My Documents
   - Application Data
   - Temporary Internet Files

3. Save your changes, and exit the editor.

4. Copy `c:\windows\system32\GroupPolicy` to all other Windows machines.

   - It's a good idea to copy it to your Windows OS deployment system to have it included at install time.

17.5.3.3 Global policies for roaming profiles

By using the legacy Windows policy editor (`poledit.exe`), you can create a Policy file (NTConfig.pol) and put it in your netlogon share on the main server. This has the advantage of working almost instantly on all Windows machines.

For some time, the policy editor standalone download has been removed from the Microsoft web site, but it's still available as part of the ORK Tools.

With `poledit.exe` you can create .pol files. If you put such a file on the main server as `/etc/samba/netlogon/NTLOGON.POL` it will automatically be read by Windows machines and temporarily overwrite the registry, thus applying the changes.

To make sensible use of `poledit.exe` you also need to download appropriate .adm files for your operating system and applications; otherwise you cannot define many settings in `poledit.exe`.

Be aware that the new group policy tools, `gpedit.msc` and `gpmc.msc`, cannot create .pol files; they either only work for the local machine or need an Active Directory server.

If you understand German, http://gruppenrichtlinien.de is a very good web site on this topic.

17.5.3.4 Editing Windows registry

You can edit the registry of the local computer, and copy this registry key to other computers

1. Start the Registry Editor.

2. Navigate to `HKEY_CURRENT_USER\Software\Microsoft\Windows NT\CurrentVersion\Winlogon`

3. Use the menu "Edit menu" -> "New" -> "String Value".

4. Call it `ExcludeProfileDirs`

5. Enter a semicolon-separated list of paths to exclude (in the same way as for a machine policy)

6. Now you can choose to export this registry key as a .reg file. Mark a selection, right-click, and select "Export".

7. Save the file and you can double click it, or add it to a script to spread it to other machines.

Sources:

- http://technet2.microsoft.com/windowsserver/en/technologies/featured/gp/default.mspx

- http://www.samba.org/samba/docs/man/Samba-HOWTO-Collection/PolicyMgmt.html

- http://isg.ee.ethz.ch/tools/realmen/det/skel.en.html

- http://www.css.taylor.edu/~nehresma/samba.html

17.5.4 Redirecting profile directories

Sometimes just removing directories from the profile is not enough. You may find that users lose files because they mistakenly save things into "My Documents" when this is not saved in the profiles. You may also want to redirect the directories used by some badly programmed applications to normal network shares.

17.5.4.1 Redirecting using machine policies

All the instructions given above about machine policies apply here too. You can use `gpedit.msc` to edit the policy and copy it to all machines. The redirection should be available under "User Configuration" -> "Windows Settings" -> "Folder Redirection". Directories that it can be useful to redirect include "Desktop" and "My Documents".

One thing to remember is that if you enable folder redirection, those folders are automatically added to the synchronised folders list. If you do not want this, you should disable it via one of the following routes:

- "User Configuration" -> "Administrative Templates" -> "Network" -> "Offline Files"

- "Computer Configuration" -> "Administrative Templates" -> "Network" -> "Offline Files"

17.5.4.2 Redirecting using global policies

FIXME: explain how to use profiles from global policies for Windows machines in the skolelinux network

17.5.5 Avoiding roaming profiles

17.5.5.1 Disabling roaming using a local policy

Using local policies, you can disable the roaming profile on individual machines. This is often wanted on special machines - for instance on dedicated machines, or machines that have lower than usual bandwith.

You can use the machine policy method describe above; the key is in "Administrative Templates" -> "System" -> "User Profiles" -> "Only allow local profiles".

17.5.5.2 Disabling roaming using global policies

FIXME: describe roaming profile key for the global policy editor here

17.5.5.3 Disabling roaming in smb.conf

If, perhaps, everyone has their own dedicated machine, and nobody else is allowed to touch it, editing the Samba configuration will let you disable roaming profiles for the entire network. You can alter the `smb.conf` file on the main server, unsetting the "logon path" and "logon home" variables, then restart samba.

```
logon path = ""
logon home = ""
```

17.6 Remote Desktop

17.6.1 Remote Desktop Service

Choosing the LTSP server profile or the combined server profile also installs xrdp, a package which uses the Remote Desktop Protocol to present a graphical login to a remote client. Microsoft Windows users can connect to the LTSP server running xrdp without installing additional software - they simply start a Remote Desktop Connection on their Windows machine and connect.

Additionally, xrdp can connect to a VNC server or another RDP server.

Some municipalities provide a remote desktop solution so that students and teachers can access Skolelinux from their home computer running Windows, Mac or Linux.

Xrdp comes without sound support; to compile the required modules this script could be used.

```
#!/bin/bash
# Script to compile / recompile xrdp PulseAudio modules.
# The caller needs to be root or a member of the sudo group.
# Also, /etc/apt/sources.list must contain a valid deb-src line.
set -e
 if [[ $UID -ne 0 ]] ; then
    if ! groups | egrep -q sudo ; then
        echo "ERROR: You need to be root or a sudo group member."
        exit 1
    fi
 fi
 if ! egrep -q  ^deb-src /etc/apt/sources.list ; then
```

```
     echo "ERROR: Make sure /etc/apt/sources.list contains a deb-src line."
     exit 1
fi
TMP=$(mktemp -d)
PULSE_UPSTREAM_VERSION="$(dpkg-query -W -f='${source:Upstream-Version}' pulseaudio)"
XRDP_UPSTREAM_VERSION="$(dpkg-query -W -f='${source:Upstream-Version}' xrdp)"
sudo apt -q update
# Get sources and build dependencies:
sudo apt -q install dpkg-dev
cd $TMP
apt -q source pulseaudio xrdp
sudo apt -q build-dep pulseaudio xrdp
# For pulseaudio 'configure' is all what is needed:
cd pulseaudio-$PULSE_UPSTREAM_VERSION/
./configure
# Adjust pulseaudio modules Makefile (needs absolute path)
# and build the pulseaudio modules.
cd $TMP/xrdp-$XRDP_UPSTREAM_VERSION/sesman/chansrv/pulse/
sed -i 's/^PULSE/#PULSE/' Makefile
sed -i "/#PULSE_DIR/a \
PULSE_DIR = $TMP/pulseaudio-$PULSE_UPSTREAM_VERSION" Makefile
make
# Copy modules to Pulseaudio modules directory, adjust rights.
sudo cp *.so /usr/lib/pulse-$PULSE_UPSTREAM_VERSION/modules/
sudo chmod 644 /usr/lib/pulse-$PULSE_UPSTREAM_VERSION/modules/module-xrdp*
# Restart xrdp, now with sound enabled.
sudo service xrdp restart
```

17.6.2 Available Remote Desktop clients

- `freerdp-x11` is installed by default and is capable of RDP and VNC.

    - RDP - the easiest way to access Windows terminal server. An alternative client package is `rdesktop`.
    - VNC client (Virtual Network Computer) gives access to Skolelinux remotely. An alternative client package is `xvncviewer`.

- NX graphical client gives students and teachers access to Skolelinux remotely on Windows, Mac or Linux PC. One municipality in Norway has provided NX support to all students since 2005. They report that the solution is stable.

- Citrix ICA client HowTo to access Windows terminal server from Skolelinux.

18   Samba in Debian Edu

⚠ The information in this chapter is outdated. Please read the information provided on the Samba wiki about supported Windows versions, needed registry patches and other procedures. Probably a line containing `server max protocol = NT1` needs to be added to the `[global]` section of `/etc/samba/smb-debian-edu.conf` on the main server. Please consider updating this chapter if you know how to configure Samba for Debian Edu.

https://wiki.samba.org/index.php/Joining_a_Windows_Client_or_Server_to_a_Domain

https://wiki.samba.org/index.php/Required_Settings_for_Samba_NT4_Domains

Samba has been fully prepared for use as an NT4-style domain controller with Windows XP, Windows Vista and Windows 7 as clients. After a machine has joined the domain, this machine can be fully managed with GOsa[2].

18.1   Getting Started

This documentation presumes that you have installed the Debian Edu main server and maybe also a Debian Edu workstation to verify that working under Debian Edu/Skolelinux works for you. We presume that you have already created some users that can flawlessly use the Debian Edu workstation. We also presume that you have a Windows XP/Vista/7 workstation at hand, so you can test access to the Debian Edu main server from a Windows machine.

After installation of the Debian Edu main server the Samba host \\TJENER should be visible in your Windows Network Neighbourhood. Debian Edu's Windows domain is SKOLELINUX. Use a Windows machine (or a Linux system with smbclient) to browse your Windows/Samba network environment.

1. START -> Run command

2. enter \\TJENER and press return

3. -> a Windows Explorer window should open and show the netlogon share on \\TJENER, and maybe printers you already have configured for printing under Unix/Linux (CUPS queues).

18.1.1   Accessing files via Samba

Student and teacher user accounts that have been configured via GOsa² should be able to authenticate against \\TJENER\HOMES or \\TJENER\<username> and access their home directories with Windows machines **not** joined to the Windows SKOLELINUX domain.

1. START -> Run command

2. enter \\TJENER\HOMES or \\TJENER\<username> and press return

3. enter your login credentials (username, password) in the authentication dialog window that appears

4. -> a Windows Explorer window should open and show files and folders in your Debian Edu home directory.

By default only the [homes] and the [netlogon] shares are exported; further share examples for students and teachers can be found in `/etc/samba/smb-debian-edu.conf` on your Debian Edu main server.

18.2   Domain Membership

To use Samba on TJENER as a domain controller, your network's Windows workstations have to join the SKOLELINUX domain provided by the Debian Edu main server.

The first thing you have to do is to enable the SKOLELINUX\Administrator account. This account is not intended for day-to-day usage; its current main purpose is to add Windows machines to the SKOLELINUX domain. To enable this account log on to TJENER as the first user (created during main server installation) and run this command:

- $ sudo smbpasswd -e Administrator

The password of SKOLELINUX\Administrator has been preconfigured during the main server's installation. Please use the system's root account when authenticating as SKOLELINUX\Administrator.

Once you are done with your administrative work make sure to disable the SKOLELINUX\Administrator account again:

- $ sudo smbpasswd -d Administrator

18.2.1   Windows hostname

Make sure your Windows machine has the name that you want to use in the SKOLELINUX domain. If not, rename it first (and then reboot). The NetBIOS host name of the Windows machine will later on be used in GOsa² and cannot be changed there (without breaking the domain membership for this machine).

18.2.2 Joining the SKOLELINUX Domain with Windows XP

Joining Windows XP machines (tested with Service Pack 3) works out of the box.

NOTE: Windows XP Home does not support domain membership; Windows XP Professional is required here.

1. log on to the Windows XP machine as Administrator (or any other account with Administrator privileges)

2. click on "Start" then right-click on "Computer" and click on "Properties"

3. select tab "Computer Name" and click on "Change..."

4. under "Member of", select the radio button beside "Domain:", type SKOLELINUX and then click "OK"

5. a pop up box will request to enter credentials of an account with rights to join the domain. Type username SKOLELINUX\Administrator and the root password, click "OK"

6. a confirmation pop up box will welcome you to the SKOLELINUX domain. Clicking on "OK", will result in having another message informing that a reboot for the machine is required to apply the changes. Click on "OK"

After the reboot, when you login the first time, click on the "Options >>" button and select the domain SKOLELINUX instead of the local domain ("this computer").

If joining the domain has been successful you should then be able to view the host details within GOsa² (under the menu section "Systems").

18.2.3 Joining the SKOLELINUX Domain with Windows Vista/7

Joining Windows Vista/7 machines to the SKOLELINUX domain requires the installation of a registry patch on the Windows Vista/7 client. This patch is provided at this location:

- \\tjener\netlogon\win7+samba_domain-membership\Win7_Samba3DomainMember.reg

For further information please consult the included README_Win7-Domain-Membership.txt in the same folder. Make sure you apply this patch as a local Administrator of the Windows system.

After applying the above patch and rebooting the client system you should be able to join the SKOLELINUX domain:

1. click on "Start" then right-click on "Computer" and click on "Properties"

2. the basic system information page will open. Under "Computer name, domain, and workgroup settings", click on "Change Settings"

3. on the System Properties page, click on "Change..."

4. under "Member of", select the radio button beside "Domain:", type SKOLELINUX and then click "OK"

5. a pop up box will request to enter credentials of an account with rights to join the domain. Type username SKOLELINUX\Administrator and the root password, click "OK"

6. a confirmation pop up box will welcome you to the SKOLELINUX domain. Clicking on "OK", will result in having another message informing that a reboot for the machine is required to apply the changes. Click on "OK"

After the reboot, when you login the first time, click on the "Options >>" button and select the domain SKOLELINUX instead of the local domain ("this computer").

If joining the domain has been successful you should then be able to view the host details within GOsa² (under the menu section "Systems").

18.3　First Domain Logon

Debian Edu ships some logon scripts that pre-configure the Windows user profile on first logon. When logging on to a Windows workstation that has joined the SKOLELINUX domain for the first time the following tasks are run:

1. copy the user's Firefox profile to a separate location and register that with Mozilla Firefox on Windows

2. set up Web-Proxy and start page in Firefox

3. set up Web-Proxy and start page in IE

4. add a MyHome icon to the Desktop that points to drive H: and opens Windows Explorer on double-click

Other tasks are run on every logon. For further information on this, please refer to the /etc/samba/netlogon folder on your Debian Edu main server.

19　HowTos for teaching and learning

All Debian packages mentioned in this section can be installed by running apt install <package> (as root).

19.1　Teaching Programming

stable/education-development is a meta package depending on a lot of programming tools. Please note that almost 2 GiB of disk space is needed if this package is installed. For more details (maybe to install only a few packages), see the Debian Edu Development packages page.

19.2　Monitoring pupils

⚠ **Warning**: make sure you know the status of the laws about monitoring and restricting computer users' activities in your jurisdiction.

Some schools use control tools like Epoptes or iTALC to supervise their students. See also: Epoptes Homepage and iTALC Homepage.

To get full Epoptes support, these steps are required.

```
# Run on a combi server (and on each additional ltsp server):
apt update
apt install epoptes
ltsp-chroot -m --arch i386 apt update
ltsp-chroot -m --arch i386 apt install epoptes-client
ltsp-chroot -m --arch i386 apt install ssvnc
ltsp-chroot -m --arch i386 sed -i 's/test -f/#test -f/' /etc/init.d/epoptes-client
ltsp-chroot -m --arch i386 sed -i 's/grep -qs/#grep -qs/' /etc/init.d/epoptes-client
# If diskspace matters, use 'ltsp-update-image -n' instead.
ltsp-update-image
```

19.3　Restricting pupils' network access

Some schools use Squidguard or Dansguardian to restrict Internet access.

19.4   HowTos from wiki.debian.org

The HowTos from <http://wiki.debian.org/DebianEdu/HowTo/> are either user- or developer-specific. Let's move the user-specific HowTos over here (and delete them over there)! (But first ask the authors if they are happy with moving them and putting them under the GPL - see the page histories to find them.)

- <http://wiki.debian.org/DebianEdu/HowTo/TeacherFirstStep> - incomplete but interesting

20   HowTos for users

20.1   Changing passwords

Every user should change her or his password by using GOsa[2]. To do so, just use a browser and go to `https://www/gosa/`.

Using GOsa[2] to change the password ensures that passwords for Kerberos (krbPrincipalKey), LDAP (userPassword) and Samba (sambaNTPassword and sambaLMPassword) are the same.

Changing passwords using PAM is working also at the GDM login prompt, but this will only update the Kerberos password, and not the Samba and GOsa[2] (LDAP) password. So after you changed your password at the login prompt, you really should also change it using GOsa[2].

20.2   Java

20.2.1   Running standalone Java applications

Standalone Java applications are supported out of the box by the OpenJDK Java runtime.

20.2.2   Running Java applications in the web browser

Running Java applets is supported in the Firefox ESR browser by the OpenJDK Java runtime. Please note that this support will end early 2018.

20.3   Using email

All users can send and receive mails within the internal network; self-signed certificates are provided to allow TLS secured connections. To allow mail outside the internal network, the administrator needs to configure the mailserver `exim4` to suit the local situation, starting with `dpkg-reconfigure exim4-config`.

Every user who wants to use Thunderbird needs to configure it as follows. For a user with username jdoe the internal email address is jdoe@postoffice.intern.

20.3.1   Thunderbird

- Start Thunderbird
- Click 'Skip this and use my existing email'
- Enter your email address
- Uncheck 'Remember password'
- Don't enter your password as Kerberos single sign on will be used
- Click 'Continue'

- For both IMAP and SMTP the settings should be 'STARTTLS' and 'Kerberos/GSSAPI'; adjust if not detected automatically

- Click 'Done'

- First time accessing the inbox click 'Confirm Security Exception' to accept the certificate; same applies if sending mail for the first time.

20.3.2 Obtaining a Kerberos ticket to read email on diskless workstations

If working on a diskless workstation, you don't have a Kerberos TGT by default. To get one, click the credentials button in the system tray. Enter your password and the ticket will be granted.

20.4 Volume control

On thin clients, `pavucontrol` or `alsamixer` (but not `kmix`) can be used to change audio volume.

On other machines (workstations, LTSP servers, and diskless workstations), `kmix` or `alsamixer` can be used.

21 Contribute

21.1 Contribute locally

Currently there are local teams in Norway, Germany, the region of Extremadura in Spain, Taiwan and France. "Isolated" contributors and users exist in Greece, the Netherlands, Japan and elsewhere.

The support chapter has explanations and links to localised resources, as *contribute* and *support* are two sides of the same coin.

21.2 Contribute globally

Internationally we are organised into various teams working on different subjects.

Most of the time, the developer mailing list is our main medium for communication, though we have monthly IRC meetings on #debian-edu on irc.debian.org and even, less frequently, real gatherings, where we meet each other in person. New contributors should read our http://wiki.debian.org/DebianEdu/ArchivePolicy.

A good way to learn what is happening in the development of Debian Edu is to subscribe to the commit mailinglist.

21.3 Documentation writers and translators

This document needs your help! First and foremost, it is not finished yet: if you read it, you will notice various FIXMEs within the text. If you happen to know (a bit of) what needs to be explained there, please consider sharing your knowledge with us.

The source of the text is a wiki and can be edited with a simple webbrowser. Just go to http://wiki.debian.org/DebianEdu/Documentation/Stretch/ and you can contribute easily. Note: a user account is needed to edit the pages; you need to create a wiki user first.

Another very good way to contribute and to help users is by translating software and documentation. Information on how to translate this document can be found in the translations chapter of this book. Please consider helping the translation effort of this book!

22 Support

22.1 Volunteer based support

22.1.1 in English

- http://wiki.debian.org/DebianEdu
- https://lists.skolelinux.org/listinfo/admin-discuss - support mailing list
- #debian-edu on irc.debian.org - IRC channel, mostly development related; do not expect real time support even though it frequently happens 😃

22.1.2 in Norwegian

- https://lists.skolelinux.org/listinfo/bruker - support mailing list
- https://lists.skolelinux.org/listinfo/linuxiskolen - mailing list for the development member organisation in Norway (FRISK)
- #skolelinux on irc.debian.org - IRC channel to support Norwegian users

22.1.3 in German

- http://lists.debian.org/debian-edu-german - support mailing list
- http://wiki.skolelinux.de - wiki with lots of HowTos etc.
- #skolelinux.de on irc.debian.org - IRC channel to support German users

22.1.4 in French

- http://lists.debian.org/debian-edu-french - support mailing list

22.2 Professional support

Lists of companies providing professional support are available from http://wiki.debian.org/DebianEdu/Help/ProfessionalH

23 New features in Debian Edu Stretch

23.1 New features for Debian Edu 9+edu0 Codename Stretch

23.1.1 Known issues

- see the Debian Edu Stretch status page.

23.1.2 Installation changes

- New version of debian-installer from Debian Stretch, see its installation manual for more details.
- The "Thin-Client-Server" profile has been renamed to "LTSP-Server" profile.
- New artwork based on the "soft Waves" theme, the default artwork for Debian 9 Stretch.

23.1.3   Software updates

- Everything which is new in Debian 9 Stretch, eg:

  - Linux kernel 4.9
  - Desktop environments KDE Plasma Workspace 5.8, GNOME 3.22, Xfce 4.12, LXDE 0.99.2, MATE 1.16
    * KDE Plasma Workspace is installed by default; to choose one of the others see this manual.
  - Firefox 45.9 ESR and Chromium 59
    * Iceweasel has been re-renamed to Firefox! 🙂
  - Icedove has been re-renamed to Thunderbird and is now installed by default.
  - LibreOffice 5.2.6
  - Educational toolbox GCompris 15.10
  - Music creator Rosegarden 16.06
  - GOsa 2.7.4
  - LTSP 5.5.9
  - Debian Stretch includes more than 50000 packages available for installation.

  - More information about Debian 9 Stretch is provided in the release notes and the installation manual.

23.1.4   Documentation and translation updates

- Translation updates for the templates used in the installer. These templates are now available in 29 languages.

- The Debian Edu Stretch Manual is fully translated to German, French, Italian, Danish, Dutch, Norwegian Bokmål and Japanese. The Japanese translation was newly added for Stretch.

  - Partly translated versions exist for Spanish, Polish and Simplified Chinese.

23.1.5   Other changes compared to the previous release

- Icinga replaces Nagios as monitoring tool.

- kde-spectacle replaces ksnapshot as screenshot tool.

- The free flash player gnash is back again.

- Plymouth is installed and activated by default, except for the 'Main Server' and 'Minimal' profiles; pressing ESC allows to view boot and shutdown messages.

- Upon upgrade from Jessie the LDAP data base has to be adjusted. The sudoHost value 'tjener' has to be replaced with 'tjener.intern' using GOsa[2] or an LDAP editor.

- The 32-bit PC support (known as the Debian architecture i386) now no longer covers a plain i586 processor. The new baseline is the i686, although some i586 processors (e.g. the "AMD Geode") will remain supported.

- Debian 9 enables unattended upgrades (for security updates) by default for new installations. This might cause a delay of about 15 minutes if a system with a low uptime value is powered off.

- LTSP now uses NBD instead of NFS for the root filesystem. After each single change to an LTSP chroot, the related NBD image must be regenerated (`ltsp-update-image`) for the changes to take effect.

- Concurrent logins of the same user on LTSP server and LTSP thin client are no longer allowed.

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26   Translations of this document

Versions of this document translated into German, Italian, French, Danish, Dutch, Norwegian Bokmål and Japanese are available. Incomplete translations exist for Spanish, Polish and Simplified Chinese. There is an online overview of shipped translations.

26.1 HowTo translate this document

26.1.1 Translate using PO files

As in many free software projects, translations of this document are kept in PO files. More information about the process can be found in `/usr/share/doc/debian-edu-doc/README.debian-edu-stretch-manual-translations`. The Git repository (see below) contains this file too. Take a look there and at the language specific conventions if you want to help translating this document.

To commit your translations you need to be a member of the Salsa project `debian-edu`.

Then check out the `debian-edu-doc` source using ssh access: `git clone git@salsa.debian.org:debian-edu/debian-edu-d`

If you only want to translate, you need to check out only a few files from Git (which can be done anonymously). Please file a bug against the debian-edu-doc package and attach the PO file to the bugreport. See instructions on how to submit bugs for more information.

You can check out the `debian-edu-doc` source anonymously with the following command (you need to have the `git` package installed for this to work):

- `git clone https://salsa.debian.org/debian-edu/debian-edu-doc.git`

Then edit the file `documentation/debian-edu-stretch/debian-edu-stretch-manual.$CC.po` (replacing $CC with your language code). There are many tools for translating available; we suggest using `lokalize`.

Then you either commit the file directly to Git (if you have the rights to do so) or send the file to the bugreport.

To update your local copy of the repository use the following command inside the `debian-edu-doc` directory:

- `git pull`

Read /usr/share/doc/debian-edu-doc/README.debian-edu-stretch-manual-translations to find information how to create a new PO file for your language if there isn't one yet, and how to update translations.

Please keep in mind that this manual is still under development, so don't translate any string which contains " FIXME".

Basic information about Salsa (the host where our Git repository is located) and Git is available at https://wiki.debian.org/Salsa.

If you are new to Git, look at the Pro Git book; it has a chapter on the recording changes to the repository. Also you might want to look at the `gitk` package that provides a GUI for Git.

26.1.2 Translate online using a web browser

Some language teams have decided to translate via Weblate. See https://hosted.weblate.org/projects/debian-edu-docum debian-edu-stretch/ for more information.

Please report any problems.

27 Appendix A - The GNU General Public License

```
Note to translators: there is no need to translate the GPL license text.
Translations are available at https://www.gnu.org/licenses/old-licenses/gpl-2.0- ↵
    translations.html.
```

27.1 Manual for Debian Edu 9+edu0 Codename Stretch

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28   Appendix B - no Debian Edu Live CD/DVDs for Stretch yet

⚠ Debian Edu Live CD/DVDs for Stretch are not available at the moment.

28.1   Features of the Standalone image

- XFCE desktop
- All packages from the Standalone profile
- All packages from the laptop task

28.2 Features of the Workstation image

- XFCE desktop

- All packages from the Workstation profile

- All packages from the laptop task

28.3 Activating translations and regional support

To activate a specific translation, boot using `locale=ll_CC.UTF-8` as a boot option, where ll_CC.UTF-8 is the locale name you want. To activate a given keyboard layout, use the `keyb=KB` option where KB is the desired keyboard layout. Here is a list of commonly used locale codes:

Language (Region)	Locale value	Keyboard layout
Norwegian Bokmål	nb_NO.UTF-8	no
Norwegian Nynorsk	nn_NO.UTF-8	no
German	de_DE.UTF-8	de
French (France)	fr_FR.UTF-8	fr
Greek (Greece)	el_GR.UTF-8	el
Japanese	ja_JP.UTF-8	jp
Northern Sami (Norway)	se_NO	no(smi)

A complete list of locale codes is available in `/usr/share/i18n/SUPPORTED`, but only the UTF-8 locales are supported by the live images. Not all locales have translations installed, though. The keyboard layout names can be found in /usr/share/keymaps/i386/.

28.4 Stuff to know

- The password for the user is "user"; root has no password set.

28.5 Known issues with the image

- ⚠️ There are no images yet 🙁

28.6 Download

The image would be (but currently isn't) available via FTP, HTTP or rsync from `ftp.skolelinux.org` under `cd-stretch-live/`.

29 Appendix C - Features in older releases

29.1 New features for Debian Edu 8+edu0 Codename Jessie released 2016-07-02

- read the release announcement on www.debian.org: Debian Edu / Skolelinux Jessie — a complete Linux solution for your school.

29.1.1   Installation changes

- New version of debian-installer from Debian Jessie, see installation manual for more details.

29.1.2   Software updates

- Everything which is new in Debian 8 Jessie, eg:
  - Linux kernel 3.16.x
  - Desktop environments KDE Plasma Workspace 4.11.13, GNOME 3.14, Xfce 4.10, LXDE 0.5.6
    * new optional desktop environment: MATE 1.8
    * KDE Plasma Workspace is installed by default; to choose one of the others see this manual.
  - the browsers Iceweasel 31 ESR and Chromium 41
  - LibreOffice 4.3.3
  - Educational toolbox GCompris 14.12
  - Music creator Rosegarden 14.02
  - GOsa 2.7.4
  - LTSP 5.5.4
  - new boot framework: systemd. More information is available in the Debian systemd wiki page and in thesystemd manual.
  - Debian Jessie includes about 42000 packages available for installation.
  - More information about Debian 8 Jessie is provided in the release notes and the installation manual.

29.1.3   Documentation and translation updates

- Translation updates for the templates used in the installer. These templates are now available in 29 languages.

- Two manual translations have been completed: Dutch and Norwegian Bokmål.

- The Debian Edu Jessie Manual is fully translated to German, French, Italian, Danish, Dutch and Norwegian Bokmål. A partly translated version exists for Spanish.

29.1.4   Other changes compared to the previous release

- *squid*: Shutdown and reboot of the main server takes longer than before due to a new default setting `shutdown_lifetime 30 seconds`. As an example the delay could be set to 10 seconds by appending the line `shutdown_lifetime 10 seconds` to `/etc/squid3/squid.conf`.

- *ssh*: The root user is no longer allowed to login via SSH with password. The old default `PermitRootLogin yes` has been replaced with `PermitRootLogin without-password`, so ssh-keys will still work.

- *slbackup-php*: To be able to use the slbackup-php site (which uses root logins via ssh), `PermitRootLogin yes` has to be set temporarily in `/etc/ssh/sshd_config`.

- *sugar*: As the Sugar desktop was removed from Debian Jessie, it is also not available in Debian Edu jessie.

29.2   New features in Debian Edu 7.1+edu0 Codename Wheezy released 2013-09-28

29.2.1   User visible changes

- Updated artwork and new Debian Edu / Skolelinux logo, visible during installation, in the login screen and as desktop wallpaper.

29.2.2   Installation changes

- New version of debian-installer from Debian Wheezy, see installation manual for more details.

- The DVD image was dropped, instead we added a USB flash drive / Blu-ray disc image, which behaves like the DVD image, but is too big to fit on a DVD.

29.2.3   Software updates

- Everything which is new in Debian Wheezy 7.1, eg:

  - Linux kernel 3.2.x
  - Desktop environments KDE "Plasma" 4.8.4, GNOME 3.4, Xfce 4.8.6, and LXDE 0.5.5 (KDE "Plasma" is installed by default; to choose GNOME, Xfce or LXDE: see manual.)
  - Web browser Iceweasel 17 ESR
  - LibreOffice 3.5.4
  - LTSP 5.4.2
  - GOsa 2.7.4
  - CUPS print system 1.5.3
  - Educational toolbox GCompris 12.01
  - Music creator Rosegarden 12.04
  - Image editor Gimp 2.8.2
  - Virtual universe Celestia 1.6.1
  - Virtual stargazer Stellarium 0.11.3
  - Scratch visual programming environment 1.4.0.6
  - New version of debian-installer from Debian Wheezy, see installation manual for more details.
  - Debian Wheezy includes about 37000 packages available for installation.

  - More information about Debian Wheezy 7.1 is provided in the release notes and the installation manual.

29.2.4   Documentation and translation updates

- Translation updates for the templates used in the installer. These templates are now available in 29 languages.

- The Debian Edu Wheezy Manual is fully translated to German, French, Italian and Danish. Partly translated versions exist for Norwegian Bokmål and Spanish.

29.2.5   LDAP related changes

- Slight changes to some objects and acls to have more types to choose from when adding systems in GOsa. Now systems can be of type server, workstation, printer, terminal or netdevice.

29.2.6   Other changes

- New Xfce desktop task.

- LTSP diskless workstations run without any configuration.

- On the dedicated client network of LTSP servers (default 192.168.0.0/24), machines run by default as diskless worksta-tions if they are powerful enough.

- GOsa gui: Now some options that seemed to be available, but are non functional, are greyed out (or are not clickable). Some tabs are completely hidden to the end user, others even to the GOsa admin.

29.2.7 Known issues

- Using KDE "Plasma" on standalone and roaming workstations, at least Konqueror, Chromium and Step sometimes fail to work out-of-the box when the machines are used outside the backbone network, proxy use is required to use the other network but no wpad.dat information is found. Workaround: Use Iceweasel or configure the proxy manually.

29.3 Historic information about older releases

The following Debian Edu releases were made further in the past:

- Debian Edu 6.0.7+r1 Codename "Squeeze", released 2013-03-03.

- Debian Edu 6.0.4+r0 Codename "Squeeze", released 2012-03-11.

- Debian Edu 5.0.6+edu1 Codename "Lenny", released 2010-10-05.

- Debian Edu 5.0.4+edu0 Codename "Lenny", released 2010-02-08.

- Debian Edu "3.0r1 Terra", released 2007-12-05.

- Debian Edu "3.0r0 Terra" released 2007-07-22. Based on Debian 4.0 Etch released 2007-04-08.

- Debian Edu 2.0, released 2006-03-14. Based on Debian 3.1 Sarge released 2005-06-06.

- Debian Edu "1.0 Venus" release 2004-06-20. Based on Debian 3.0 Woody released 2002-07-19.

A complete and detailed overview about older releases is contained in Appendix C of the Jessie manual; or see the related release manuals on the release manuals page.

29.3.1 More information on even older releases

More information on even older releases can be found at http://developer.skolelinux.no/info/cdbygging/news.html.