

# **Debian Edu / Skolelinux 12 Bookworm Utgivelseseshåndbok**

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# 1 Utgivelseshåndbok for Debian Edu 12 kodenavn bookworm

## Oversettelse:

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2008 Tore Skogly  
2010 Ole-Anders Andreassen  
2010 Jan Roar Rød  
2014, 2016, 2017 Ole-Erik Yrvin  
2014-2017 Ingrid Yrvin  
2014 Hans Arthur Kielland Aanesen  
2014 Knut Yrvin  
2014 FourFire Le'bard  
2014 Stefan Mitchell-Lauridsen  
2014 Ragnar Wisløff  
2018-2021 Allan Nordhøy



Dette er utgivelseshåndboken for Debian Edu 12 (bookworm) versjon.

Versjonen på <http://wiki.debian.org/DebianEdu/Documentation/Bookworm> er en wikiside, og oppdateres ofte.

Oppdaterte oversettelser er tilgjengelige [på nett](#).

## 2 Om Debian Edu og 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. It implements a client-server approach. Servers and clients are *pieces of software* that interact with one another. Servers provide information required by clients to function. When a server is installed on one machine and its client on a different machine, the machines themselves are referred to as the server and the client, by extension of the concept.

The chapters about [hardware and network requirements](#) and about the [architecture](#) contain basic system design details.

After installation of a main server, all services needed for a school network are set up and the system is ready to be used. Only users and machines need to be added via GOSa<sup>2</sup>, a comfortable Web-UI, or any other LDAP editor. A netbooting environment using PXE/[iPXE](#) 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). Also, machines can be booted via PXE/[iPXE](#) as diskless workstations or thin clients.

Several educational applications like GeoGebra, Kalzium, KGeography, GNU Solfege and Scratch are included in the default desktop environment setup, which can be extended easily and almost endlessly via the Debian universe.

### 2.1 Litt historie og hvorfor to navn

[Debian Edu / Skolelinux](#) is a Linux distribution created by the Debian Edu project. As a [Debian Pure Blend](#) distribution it is an official [Debian](#) subproject.

For din skole betyr dette at Skolelinux er en versjon av Debian GNU/Linux, og gir skolen din et IT-system ferdig oppsatt og tilpasset skoler.





Sentral sikkerhetskopi	sl-backup, slbackup-php	sikkerhetskopi
Web-mellomlager	Proxy (Squid)	webcache
Utskrift	CUPS	ipp
Sikker ekstern pålogging	OpenSSH	ssh
Automatisk oppsett	CFEngine	cfengine
LTSP-tjener(e)	LTSP	ltsp
Maskin- og tjenesteovervåkning med feilrapportering, pluss status og historie på nettet. Feilrapportering via e-post	Munin, Icinga og Site-summary	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 and via SMB2/SMB3 for other clients.

Som standard er e-post satt opp med bare lokal leveranse (f.eks. innen skolen). Men e-postlevering til resten av Internett kan settes opp dersom skolen har en permanent fast Internett-tilkopling. Klienter er satt opp til å levere e-post til tjeneren (ved bruk av «smarthost»), og brukere kan **få tilgang til sin personlige e-post** gjennom IMAP.

Alle tjenester er tilgjengelig ved bruk av samme brukernavn og passord, på grunn av den sentrale brukerdatabasen for autentisering og autorisering.

For å øke ytelsen på sider som ofte blir besøkt blir det brukt en mellomtjener (proxy) som mellomlagrer filer lokalt (Squid). I tillegg til å kontrollere Internett-trafikk i ruterer gjør dette det også mulig å kontrollere Internett-tilgang på individuelle maskiner.

Klientenes nettverksoppsett gjøres automatisk ved hjelp av DHCP. Alle typer klienter kan kobles til det private subnett 10.0.0.0/8 og vil få samsvarende adresser. LTSP-klienter bør kobles til den tilhørende LTSP-tjeneren via det separate subnett 192.168.0.0/24 (dette er for å sikre at nettverkstrafikk til og fra LTSP-klienter ikke forstyrrer resten av nettverks-tjenestene).

Sentralisert logging er satt opp slik at alle maskiner sender sine Syslog-meldinger til tjeneren. Syslog-tjenesten er satt opp slik at den bare aksepterer innkommende meldinger fra det lokale nettverket.

Som standard er DNS-tjeneren satt opp med et domene bare for internt bruk (\*.intern) fram til et ekte («eksternt») DNS-domene kan settes opp. DNS-tjeneren er satt opp som en mellomlagrende DNS-tjener slik at alle maskiner på nettverket kan bruke den som hoved DNS-tjener.

Elever og lærere har mulighet til å publisere nettsider. Webtjeneren tilbyr mekanismer for autentisering av brukere, og for begrenset tilgang til individuelle sider og undermapper til visse brukere og grupper. Brukere vil ha mulighet til å lage dynamiske nettsider, siden webtjeneren vil være programmerbar på tjenersiden.

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 and network groups. This implies that groups of machines which are to form network groups will use the same namespace as user groups.

Administrasjon av tjenester vil i stor grad bli gjort via nettet, og følge etablerte standarder. Det fungerer bra i nettlesere som følger med i Skolelinux. Delegering av ulike oppgaver til individuelle brukere eller brukergrupper er mulig i administrasjonssystemet.

For å hindre visse problemer med NFS, og for å gjøre det enkelt å identifisere problemer, så må klokken på maskinene synkroniseres. For å oppnå dette er Skolelinux-tjeneren satt opp som lokal NTP-tjener (Network Time Protocol), og alle

arbeidsstasjonene og klienter er satt opp til å synkronisere klokkene sine med tjeneren. Tjeneren selv bør synkronisere seg selv med NTP mot maskiner på Internett, for dermed å sikre at hele nettverket har riktig tid.

Skrivere tilkoples der det er ønskelig, enten direkte på nettverket eller koblet til en tjener, arbeidsstasjon eller LTSP-tjener. Tilgang til skrivere kan kontrolleres for individuelle brukere i henhold til gruppen de tilhører. Dette blir oppnådd ved hjelp av kvoter og tilgangskontroll til skrivere.

### 3.1.4 LTSP-tjener(e)

Et Skolelinux-nett kan ha mange LTSP-tjenere, som installeres ved å velge LTSP-tjener-profilen.

LTSP er satt opp til å motta syslog fra tynnklient- og arbeidsstasjoner, og videresende disse meldingene til den sentrale mottakeren av syslogmeldinger.

Merk deg:

- LTSP diskless workstations are using the programs installed on the server.
- The client root filesystem is provided using NFS. After each modification to the LTSP server the related image has to be re-generated; run `debian-edu-ltsp-install --diskless_workstation yes` on the LTSP server.

### 3.1.5 Tynnklienter

A thin client setup enables ordinary PCs to function as (X-)terminals. This means that the machine boots directly from the server using PXE without using the local client hard drive. The thin client setup now uses X2Go, because LTSP has dropped support.

Thin clients are a good way to still make use of very old (mostly 32-bit) 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 NFS, and finally the X2Go client is started.

### 3.1.6 Arbeidsstasjoner uten harddisk

A diskless workstation runs all software on the PC without a locally installed operating system. This means that client machines boot via PXE without running software installed on a local hard drive.

Diskless workstations are an excellent way of using 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.

### 3.1.7 Nettverksklienter

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

## 3.2 Administrasjon

Alle Linux-maskinene som er installert ved hjelp av en Skolelinux-installer vil være satt opp til å administreres fra en sentral maskin, mest trolig tjeneren. Det vil være mulig å logge inn på alle maskiner ved hjelp av SSH, og dermed ha full tilgang til maskinene. Som root må en kjøre `kinit` først for å få en Kerberos-TGT.

All brukerinformasjon ligger i en LDAP-katalog. Oppdateringer av brukerinformasjon blir gjort mot denne databasen, og blir brukt av klientene til autentisering.

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- Tynne klienter med bare 256 MiB RAM og 400 MHz er mulig, men mer RAM og raskere prosessorer anbefales.
- For arbeidsstasjoner, tynnklienter og frittstående systemer, er 1500 MHz og 1024 MiB RAM absolutte minimumskrav. For å kjøre moderne nettlesere og LibreOffice anbefales minst 2048 MiB RAM.
- Minimumskravet til lagerplass avhenger av hvilken profil som er installert:
  - combined main server + LTSP server + workstation (if a GUI on the server is desired): 60 GiB (plus additional space for user accounts).
  - LTSP server: 40 GiB.
  - Arbeidsstasjon eller frittstående: 30 GiB.
  - minimal networked machine installation: 4 GiB.
- LTSP-tjenere trenger to nettverkskort ved bruk av standard nettverksarkitektur:
  - eth0 koblet til hovednettverket (10.0.0.0/23),
  - eth1 brukes for betjening av LTSP-klienter.
- Bærbare laptop er bevegelige arbeidsstasjoner, og har de samme krav som arbeidsstasjoner.

## 4.2 Maskinvare som er bekreftet å virke

A list of tested hardware is provided at <https://wiki.debian.org/DebianEdu/Hardware/> . This list is not nearly complete.

<https://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.

## 5 Krav for nettverksoppsett

### 5.1 Standard oppsett

Når man bruker standard oppsett for nettverksarkitekturen, så brukes disse reglene:

- You need exactly one main server.
  - Man kan ha hundrevis av arbeidsstasjoner på hovednettverket.
  - You can have a lot of LTSP servers on the main network; two different subnets are preconfigured (DNS, DHCP) in LDAP, more can be added.
  - Man kan ha hundrevis av tynnklienter og/eller diskløse arbeidsstasjoner på hvert nettverk med en LTSP-tjener.
  - Man kan ha hundrevis av andre maskiner som vil få tildelt dynamisk IP-adresse.
  - For å få tilgang til Internett så trenger man en ruter/gateway (se under).
-



### 6.2.3 BD iso images for amd64 or i386

These ISO image are approximately 7.5 GB large and can be used for installation of amd64 or i386 machines, also without access to the Internet. Like the netinst image it can be used on USB flash drives or disk media of sufficient size.

Once Bookworm has been released these images will be available for download from:

- <https://get.debian.org/cdimage/release/current/amd64/iso-bd/>
- <https://get.debian.org/cdimage/release/current/i386/iso-bd/>

### 6.2.4 Bekreftelse av nedlastede avtrykksfiler

Detailed instructions for verifying and using these images are part of the [Debian-CD FAQ](#).

### 6.2.5 Kildekode

Kildekode er tilgjengelig fra Debian-arkivet, se <https://get.debian.org/cdimage/release/current/source/> for nedlastingsalternativer.

## 6.3 Installasjon av 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 59,000 packages to choose from and a billion configuration options. For the majority of our users, our defaults should be fine. Please note: if LTSP is intended to be used, choose a lightweight desktop environment.

### 6.3.1 Scenarier for hovedtjenerinstallasjon

A. Typisk skole- eller hjemmenettverk med Internett-tilgang via ruter som tilbyr DHCP:

- Installation of a main server is possible, but after reboot there will be no Internet access (due to primary network interface IP 10.0.2.2/8).
- Se [internett-ruter](#)-kapitlet for detaljer om hvordan man setter opp en portner hvis det ikke er mulig å sette opp en eksisterende som ønsket.
- Koble sammen alle komponentene slik vist i [arkitektur](#)-kapitlet.
- The main server should have Internet connection once booted the first time in the correct environment.

B. Typisk skole- eller institusjons-nettverk, lignende det overfor, men som krever bruk av mellomtjener.

- Legg til 'debian-edu-expert' til kjernekommandolinjen. Se lenger ned for detaljer om hvordan dette gjøres.
- Noen ytterligere spørsmål må besvares, inkludert om mellomtjener.

C. Nettverk med ruter/portner IP 10.0.0.1/8 (som ikke angir en DHCP-tjener) og internettilgang:

- Så snart det automatiske nettverksoppsettet kneler (på grunn av manglende DHCP), velg manuelt nettverksoppsett.
  - Skriv inn 10.0.2.2/8 som verts-IP
  - Skriv inn 10.0.0.1 som portner-IP
  - Skriv inn 8.8.8.8 som navnetjener-IP, med mindre du vet en bedre verdi
- Hovedtjeneren bør virke etter første omstart.

D. Frakoblet (ingen internettilkobling):

- Bruk BD ISO-avbildningen.
  - Forsikre deg om at alle (ekte-/virtuelle-) nettverkskabler er trukket ut.
  - Velg "Ikke sett opp nettverket nå" (etter at DHCP har gitt opp å sette opp nettverket og du har trykket "Fortsett").
  - Oppdater systemet når det har startet opp i rett miljø med internettilgang.
-

### 6.3.2 Desktop environments

Several desktop environments are available:

- Xfce krever litt mer enn LXDE, men har derimot veldig god språkstøtte (106 språk).
- Både KDE og GNOME har god språkstøtte, men krever for mye til å brukes på gamle maskiner og med LTSP-klienter.
- Cinnamon is a lighter alternative to GNOME.
- MATE is lighter than the three above, but is missing good language support for several countries.
- LXDE har lavest ressurskrav, og støtter 35 språk.
- LXQt is a lightweight desktop environment (language support similar to LXDE) with a more modern look and feel (based on Qt just like KDE).

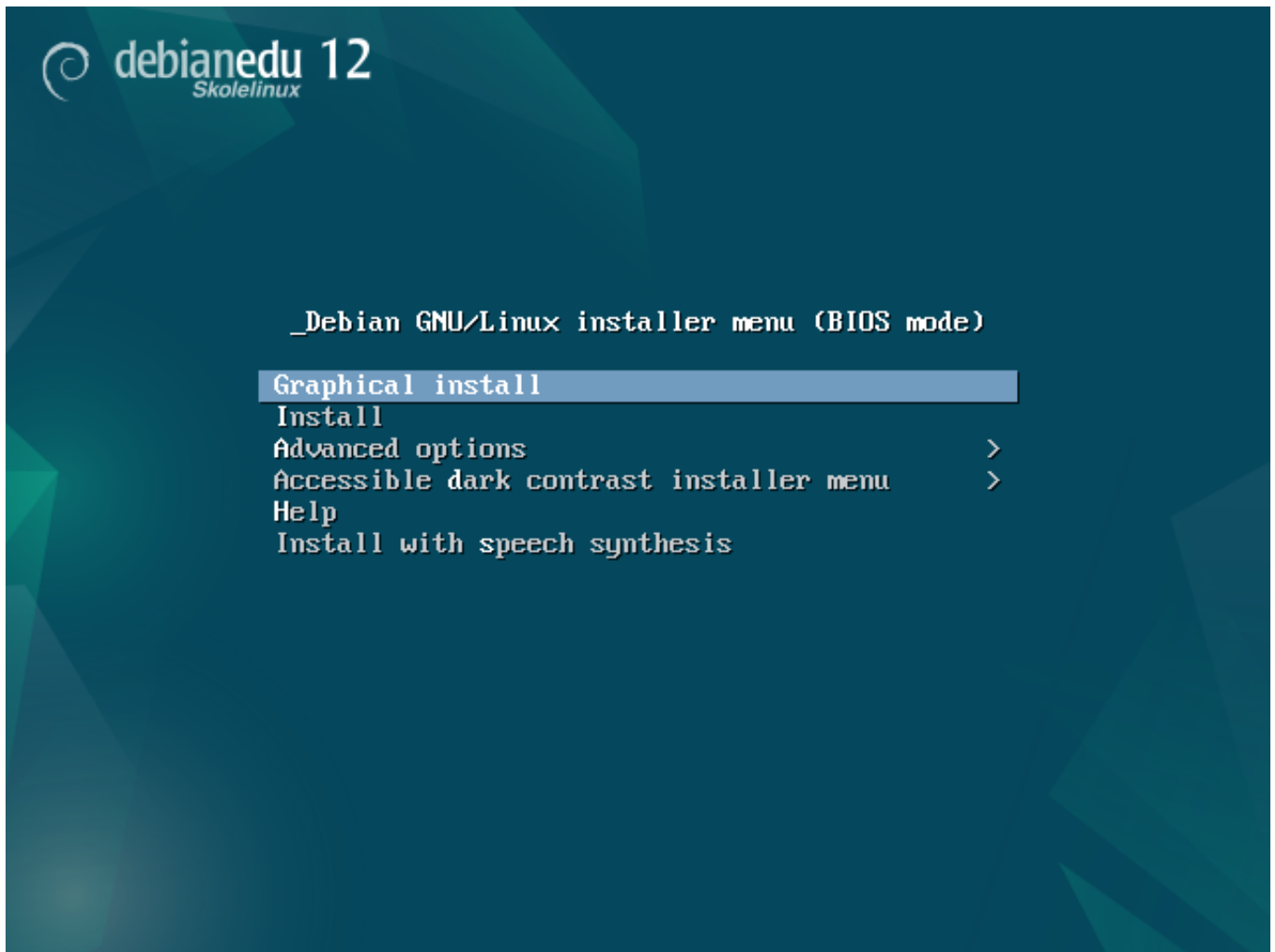
Debian Edu as an international project has chosen to use Xfce as the default desktop environment; see below how to set a different one.

### 6.3.3 Modulær installasjon

- Når du installerer et system med profilen *arbeidsstasjon*, følger det med mange utdanningsrelaterte programmer. For å kun installere den grunnleggende profilen, fjern `desktop=xxxx` kjørnekommandolinjeparameteret før du starter installasjonen; sjekk nedenfor for detaljer om hvordan dette gjøres. Dette tillater installasjon av system tilpasset dets omgivelser, og kan brukes for å spare tid på testinstallasjoner.
- Please note: If you want to install a desktop environment afterwards, don't use the Debian Edu meta-packages like e.g. `education-desktop-xfce` because these would pull in all education related programs; rather install e.g. `task-xfce-desktop` instead. One or more of the new school level related meta-packages *education-preschool*, *education-primarieschool*, *education-secondaryschool*, *education-highschool* could be installed to match the use case.
- For detaljer om Debian Edu-metapakker, se [Debian Edu-pakkeoversikten](#) page.

### 6.3.4 Installasjonstyper og valg

*Installer boot menu on 64-bit Hardware - BIOS mode*

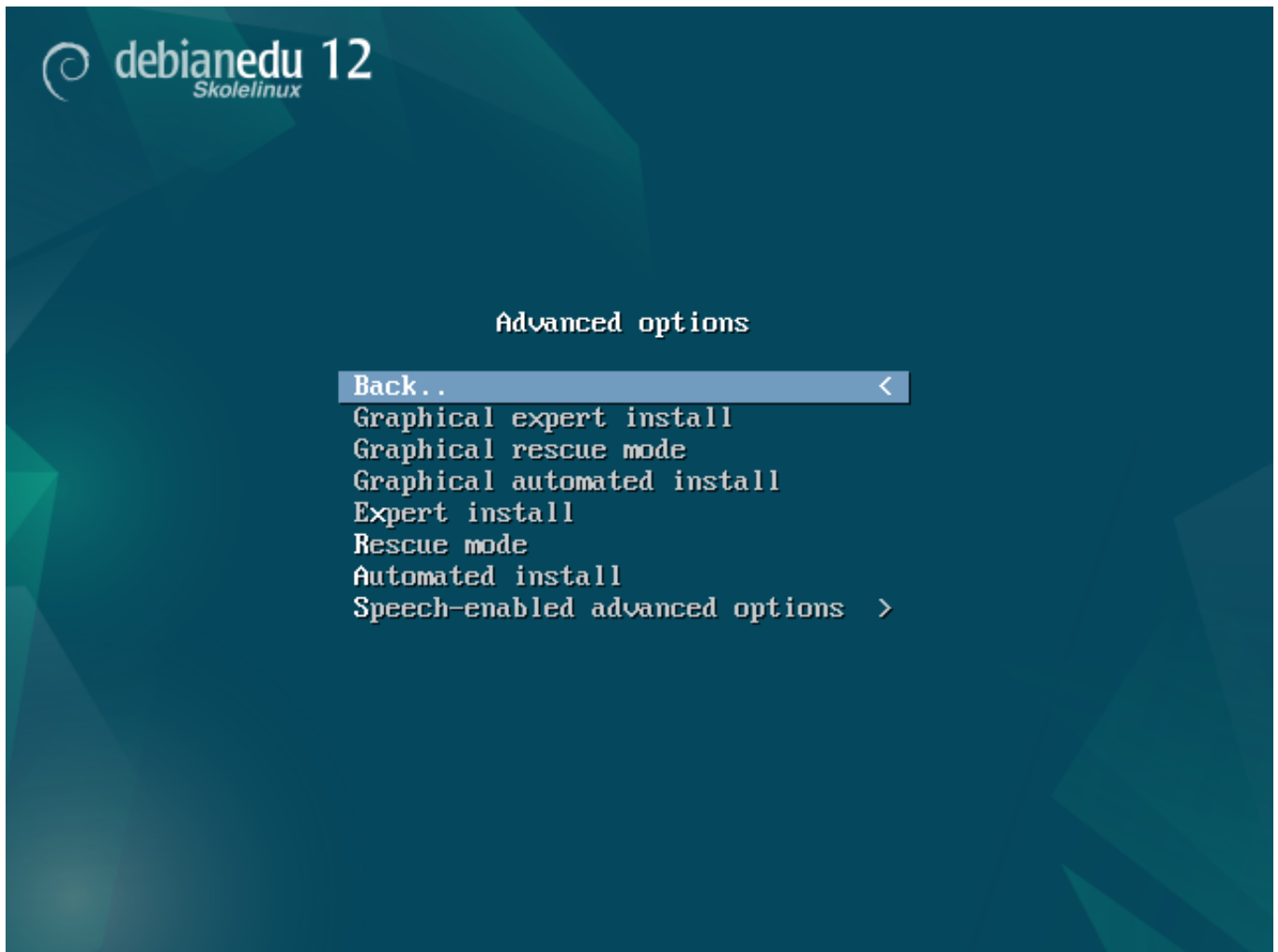


**Graphical install** bruker en GTK-installasjon hvor du kan bruke musen.

**Install** bruker tekstmodus.

**Advanced options** > viser en undermeny med flere detaljerte alternativer å velge mellom.

**Help** gir noen hint til bruk av installasjonsprosessen; se skjermbildekopi nedenfor.



**Back..** bringer deg tilbake til hovedmenyen.

**Graphical expert install** gir tilgang til alle tilgjengelige spørsmål, brukbar for mus.

**Graphical rescue mode** gjør dette installasjonsmediet til en redningsdisk for nødsituasjonsoppgaver.

**Graphical automated install** trenger en «forhåndsutfyllings»-fil.

**Expert install** gir tilgang til alle tilgjengelige spørsmål i klartekst.

**Rescue mode** tekstmodus: gjør dette installasjonsmediet til en redningsdisk for nødsituasjonsoppgaver.

**Automated install**-tekstmodus: trenger en «forhåndsutfyllings»-fil.



Do not use **Graphical expert install** or **Expert install**, use `debian-edu-expert` instead as an additional kernel parameter in exceptional cases.

*Hjelpeskjerm*

```

Welcome to Debian GNU/Linux! F1

This is a Debian 11 (bullseye) installation CD-ROM.
It was built 20210830-08:57; d-i 20210830-00:01:46.

HELP INDEX

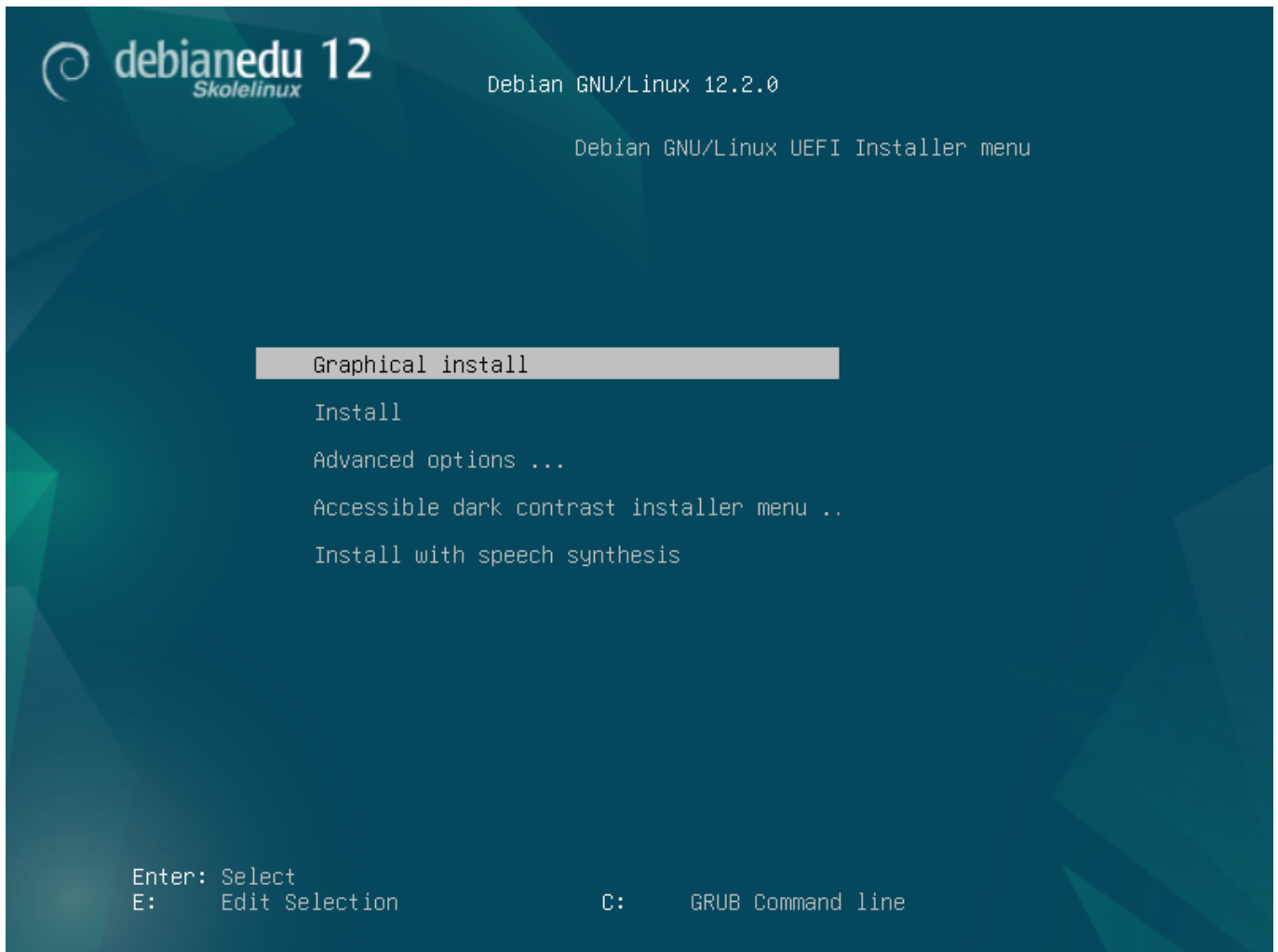
KEY      TOPIC

<F1>     This page, the help index.
<F2>     Prerequisites for installing Debian.
<F3>     Boot methods for special ways of using this CD-ROM
<F4>     Additional boot methods; rescue mode.
<F5>     Special boot parameters, overview.
<F6>     Special boot parameters for special machines.
<F7>     Special boot parameters for selected disk controllers.
<F8>     Special boot parameters for the install system.
<F9>     How to get help.
<F10>    Copyrights and warranties.

Press F2 through F10 for details, or ENTER to boot:
```

Denne hjelpeskjermen er selvforklarende, og gjør <F>-tastene på tastaturet i stand til å gi mer detaljert hjelp om de aktuelle emnene.

*Installer boot menu on 64-bit Hardware - UEFI mode*



*Legge til eller endre oppstartsparmetre for installasjoner*

In both cases, boot options can be edited by pressing the **TAB** or **E** key in the boot menu; the screenshots show the command line for **Graphical install**.



## \_Debian GNU/Linux installer menu (BIOS mode)

Graphical install

Install

Advanced options

>

Accessible dark contrast installer menu

>

Help

Install with speech synthesis

```
> /install.amd/vmlinuz modules=debian-edu-install-udeb desktop=xfce vga=788 in  
itrd=/install.amd/gtk/initrd.gz --- quiet _
```



- You can use an existing HTTP proxy service on the network to speed up the installation of the *Main Server* profile from CD. Add e.g. `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 environment instead of the default **Xfce** desktop environment, replace `xfce` with `gnome` in the `desktop=xfce` parameter.
- To install the **LXDE** desktop environment instead, use `desktop=lxde`.
- To install the **LXQt** desktop environment instead, use `desktop=lxqt`.
- To install the **KDE Plasma** desktop environment instead, use `desktop=kde`.
- To install the **Cinnamon** desktop environment instead, use `desktop=cinnamon`.
- And to install the **MATE** desktop environment instead, use `desktop=mate`.

### 6.3.5 Installasjonsprosessen

Husk **system requirements**, og pass på at du har minst to nettverkskort (NIC-er) hvis du planlegger å sette opp en LTSP-tjener.

- Velg et språk (for installasjonen og det installerte systemet).



- Wait again in case of a *combined main server* after rebooting the system. It will spend quite some time generating the SquashFS image for diskless workstations.
- In case of a separate LTSP server, the diskless workstation and/or thin client setup needs some manual steps. For details, see the [Network clients HowTo](#) chapter.

### 6.3.6 Installing a gateway using debian-edu-router

The `debian-edu-router-config` package simplifies the the setup of a gateway for a Debian Edu network through an interactive configuration process where the necessary information is obtained through a series of dialogues.

In order to make use of it, perform a minimal Debian installation. Be sure to use the regular Debian installer and not the Debian Edu installer since Debian Edu installations are not supported by `debian-edu-router-config`.

Install the `debian-edu-router-config` package using

```
DEBIAN_FRONTEND=noninteractive apt install -y -q debian-edu-router-config
```

Error messages regarding the configuration are expected and can be ignored for now.

For the configuration process following the installation of `debian-edu-router-config`, physical access to the computer is required.

The network interfaces may already be connected to the corresponding networks but do not have to be. However it is necessary to be aware which interface will be connected to which network. In order to obtain more information about the network hardware

```
lshw -class network
```

can be used.

Remove the configuration of the two network interfaces to be used from `/etc/network/interfaces` or files in `/etc/network/interfaces.d` and un-configure the two interfaces using

```
ip addr flush <interface>
```

The actual configuration process is started with

```
dpkg-reconfigure --force uif debian-edu-router
```

Package configuration

Package

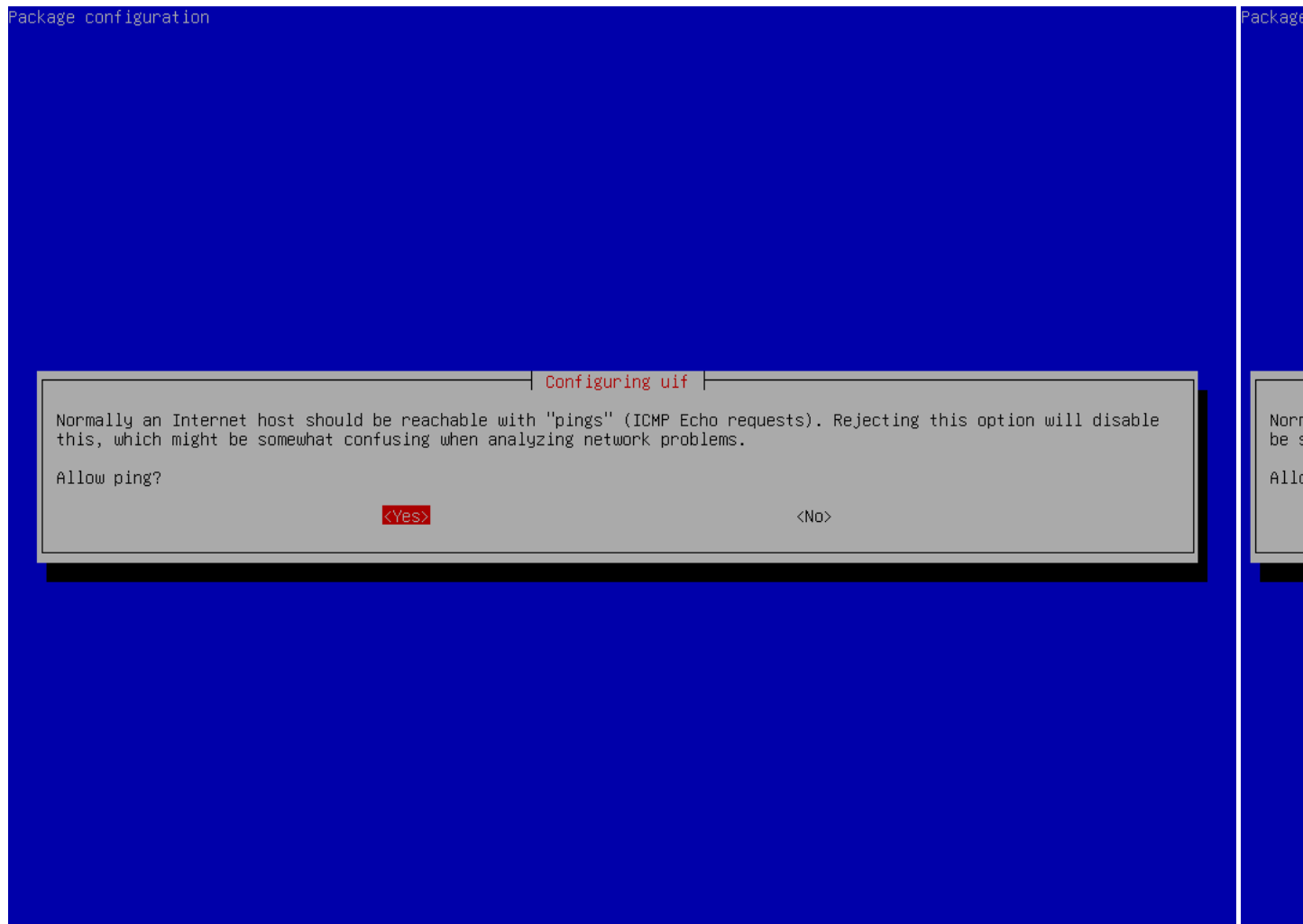
```
Configuring uif
Please choose whether the firewall should be configured now with a simple "workstation" setup, given a specialized
Debian Edu Router configuration, or left unconfigured so that you can manually edit /etc/uif/uif.conf.

Firewall configuration method

    don't touch
    workstation
    debian-edu-router

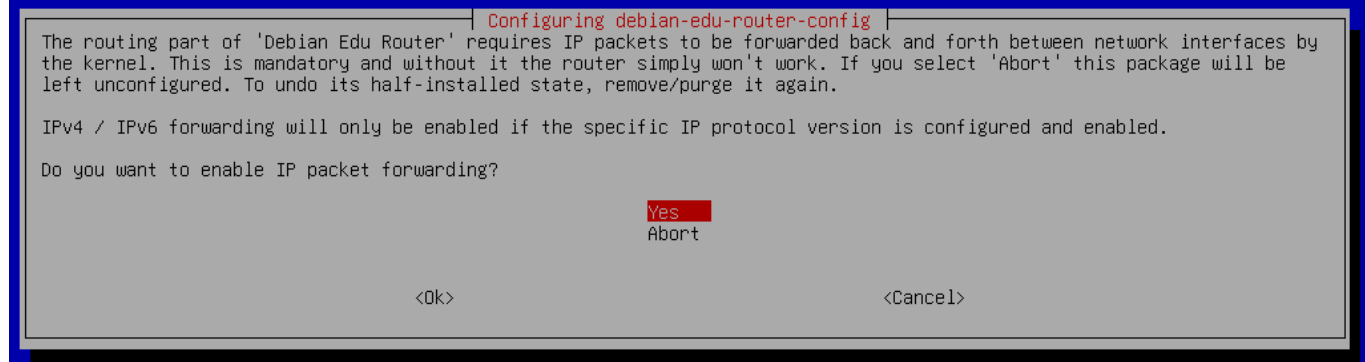
    <Ok>
```

When asked about the uif firewall configuration method choose "debian-edu-router". Confirm that you want to set up the firewall for Debian Edu Router.



Decide whether you want to respond to ping and traceroute. If unsure answer with yes as it can be useful for diagnosing network issues.

Package configuration



Confirm that you want to enable IP packet forwarding.

Package configuration

#### Configuring debian-edu-router-config

You need to assign this host's network interfaces to network types supported by Debian Edu Router. The network interface assignments can be done in three ways (plus a bail-out method).

- (1) ALL-CONNECTED - All network interfaces are already connected and you know which interface you want to use for what network type.
- (2) STEP-BY-STEP - Connect and assign network interfaces one by one. This will add dialogs between each interface assignment requesting to connect the network cable of the to-be-assigned network interface.
- (3) OFFLINE-SETUP - No network interface is currently connected, allow configuration of network interfaces that currently don't have a network carrier. You also know which interface you want to use for what network type.
- (4) SKIP-NETWORK-SETUP - Don't configure networking via this package, at all. Skip network configuration.

The network interface assignment method:

**ALL-CONNECTED** - all network cables are already connected (I know what I am doing)  
STEP-BY-STEP - connect network cables step-by-step and automatically assign network interfaces this way  
OFFLINE-SETUP - network cables are not connected (this is an offline installation, and yes, I know what ...  
SKIP-NETWORK-SETUP - don't configure network interface assignments for now, at all

<Ok>

<Cancel>

Next, assign networks to the network interfaces in your router, choose one of the offered options depending on whether your network interfaces are already connected or not.

Package configuration

Configuring debian-edu-router-config

The following network interfaces on this system are connected to a network.

enp1s0 (52:54:00:1c:48:92) - Virtio\_1.0\_network\_device  
enp2s0 (52:54:00:9a:45:fb) - Virtio\_1.0\_network\_device

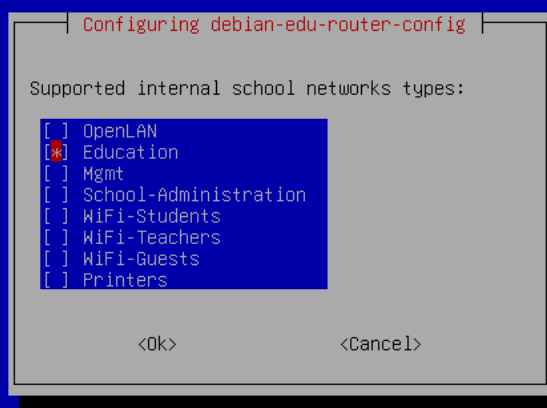
Which NIC shall be used as the 'Uplink' network interface?

☒ enp1s0  
☐ enp2s0

<Ok> <Cancel>

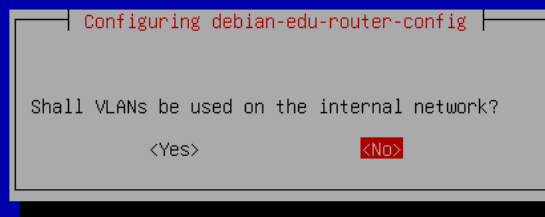
Select the interface which is connected to the upstream network.

Package configuration



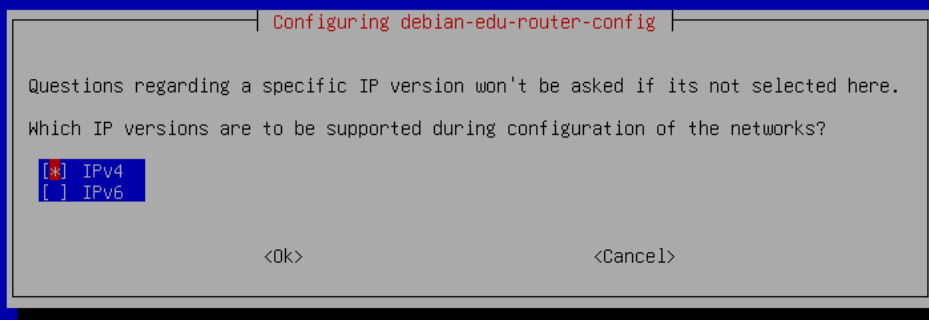
Select an internal network, in case you are unsure and simply want a single internal network select "Education" here.

Package configuration



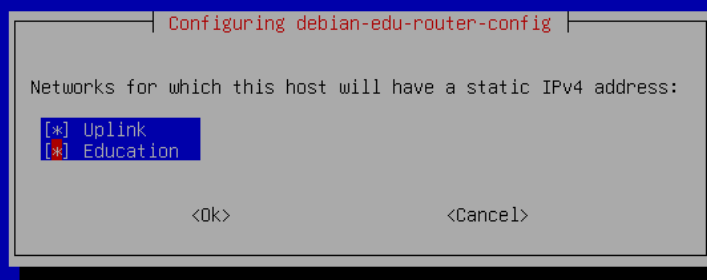
Select whether VLANs should be used for internal networks, if you are unsure select no here.

Package configuration

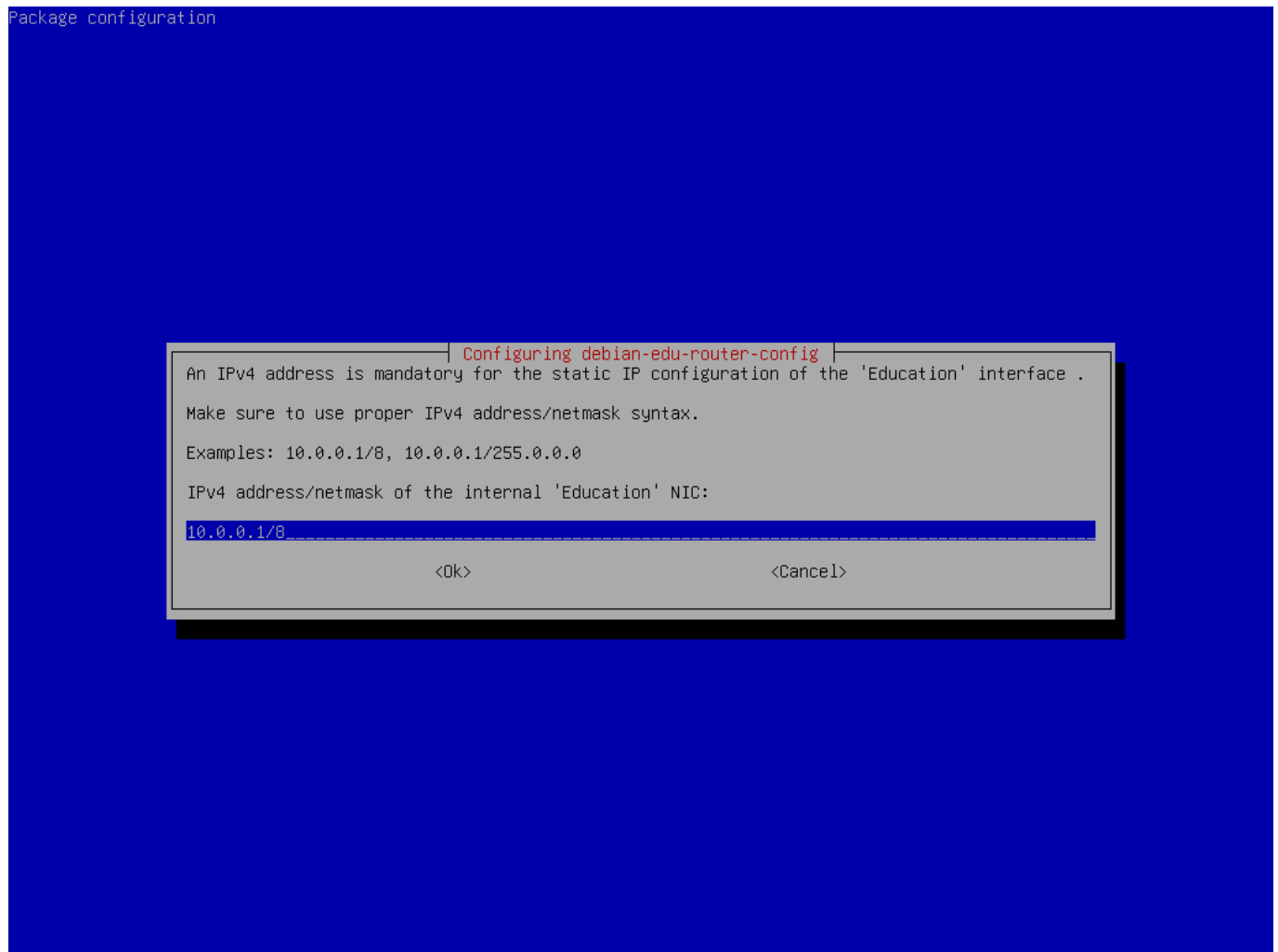


Select "IPv4" here.

Package configuration

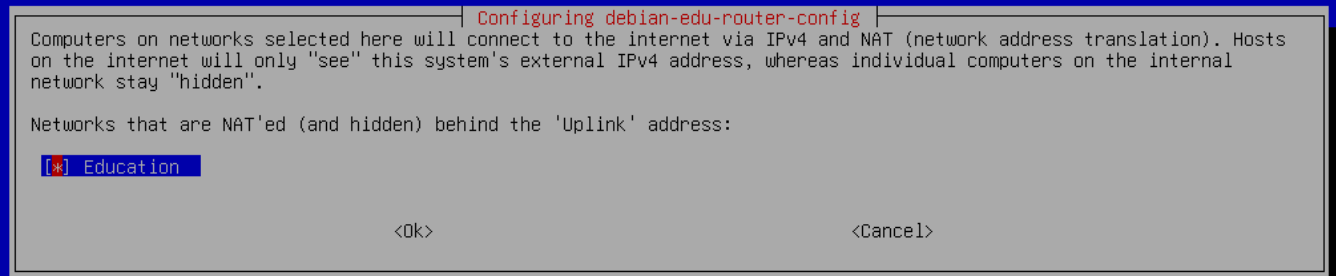


Select "Uplink" if your upstream network requires a static IP address and, if you followed the above suggestion on internal networks, "Education".



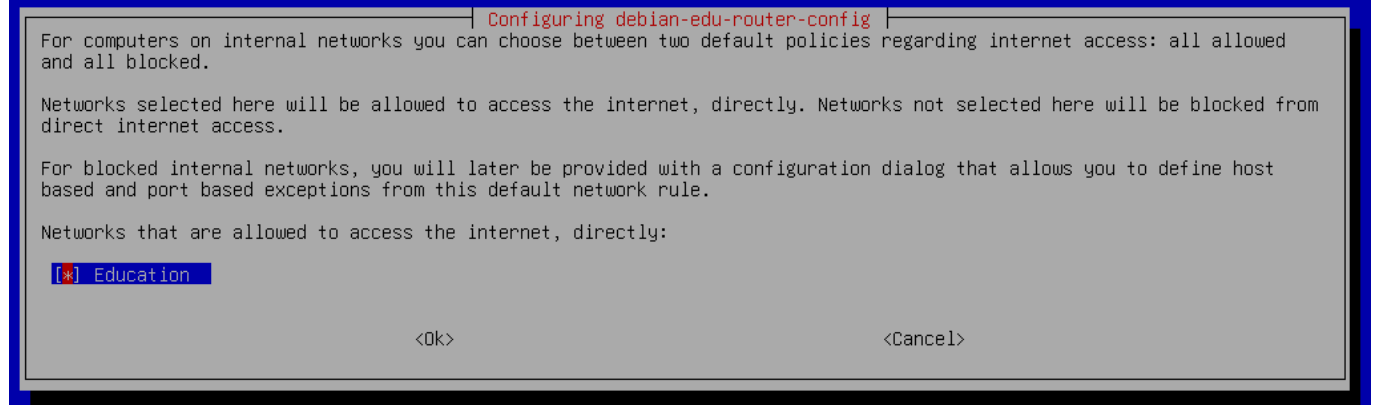
Set 10.0.0.1/8 as the static IP address for the internal network "Education" if you followed the above suggestion on internal networks.

Package configuration

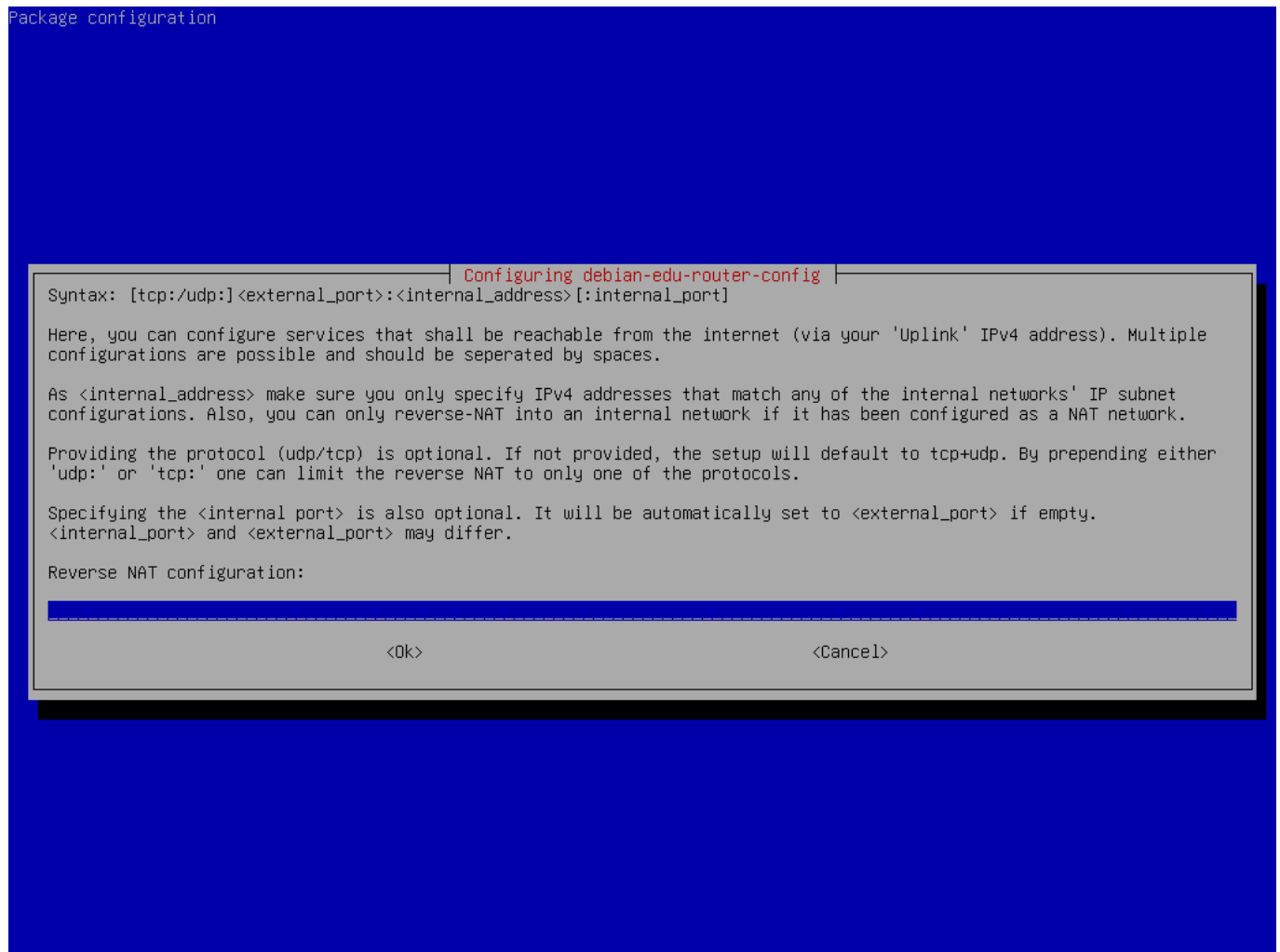


Enable NAT for the internal network.

Package configuration

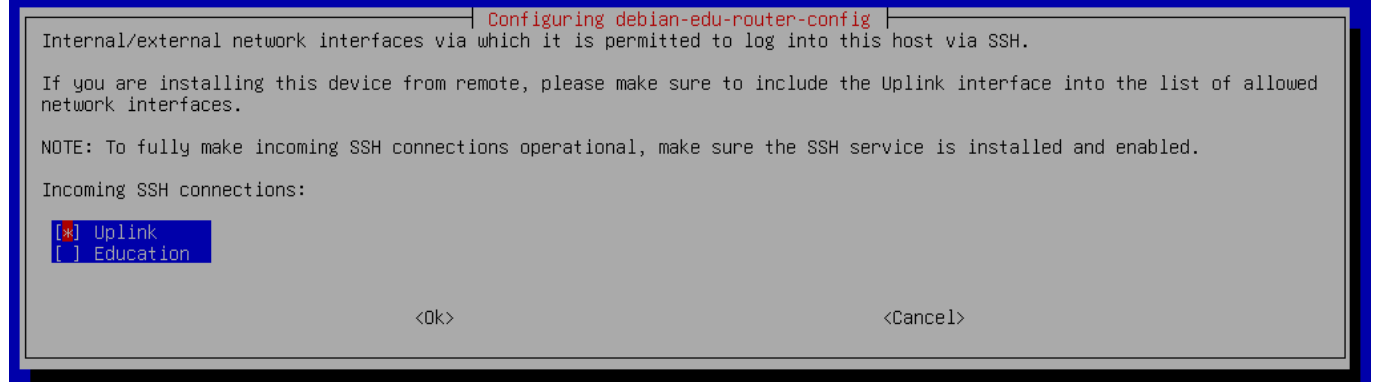


Enable internet access for internal networks.

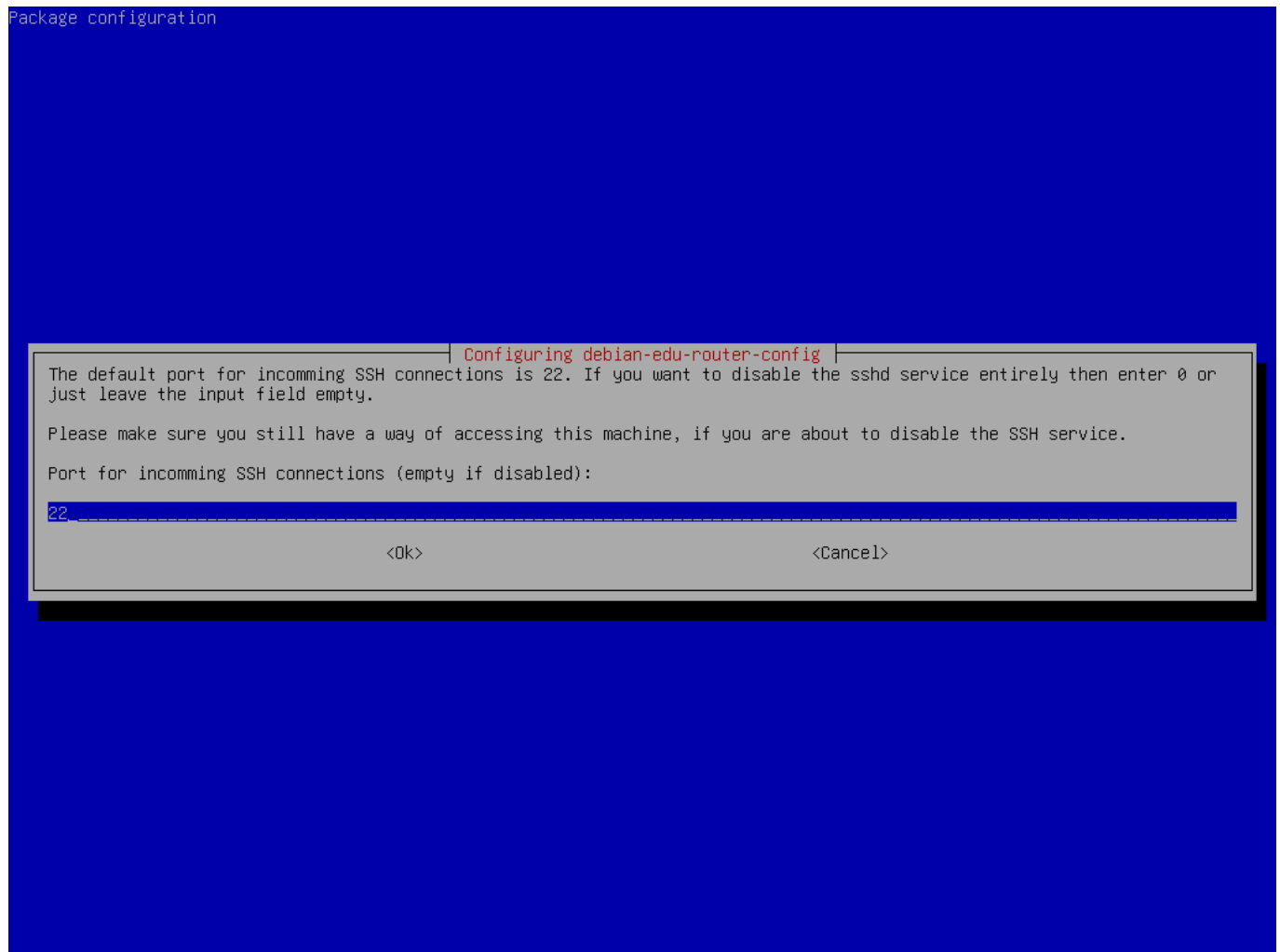


If you want to expose any internal services to the internet you can configure them using the described syntax. Note that SSH access to the gateway can be configured using the following dialog.

Package configuration

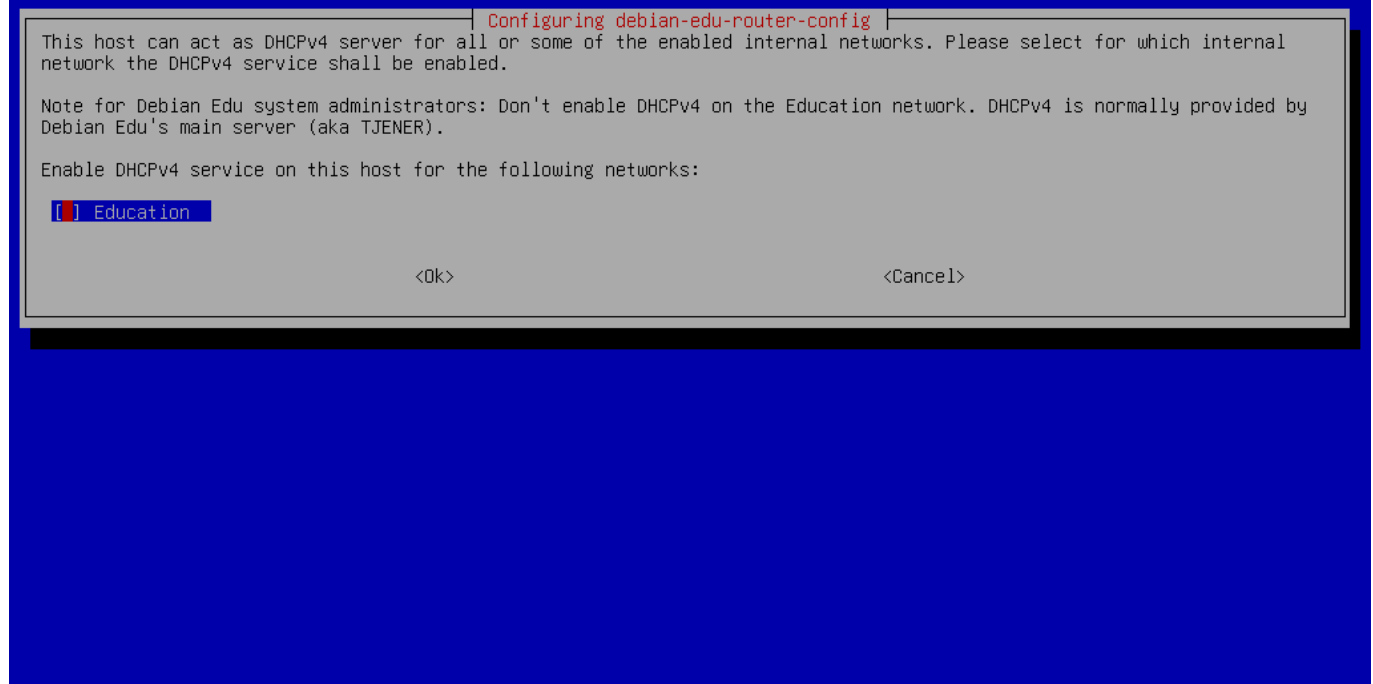


Decide from which networks you want to allow SSH access to the gateway.



Configure the SSH port, this should be 22 if the configuration has not been changed.

Package configuration



Do not enable DHCP for the internal networks, it will be offered by the Debian Edu main server.

Connect the network interfaces if you have not already done so and reboot the machine.

```
*** Welcome to Debian GNU/Linux 12 (bookworm) (x86_64) on router ***

Debian Edu Router, machine ID: 8c132dc3ad1a443f8f5c4af8e5dd9223

Uplink          -> enp1s0      -> v4: 138.201.37.171/26  [52:54:00:1c:48:
92]
Education       -> enp2s0      -> v4: 10.0.0.1/8        [52:54:00:9a:45:
fb]

Debian Edu Router Menu
=====

    i - IP traffic statistics
    s - Launch a shell session
    c - Debian Edu Router Configuration
    r - Reboot system
    x - Shutdown system
    q - Quit menu and logout as user 'root'

Please select: 
```

```
Debian Edu Router Menu
=====

i - IP traffic statistics
s - Launch a shell session
c - Debian Edu Router Configuration
r - Reboot system
x - Shutdown system
q - Quit menu and logout as user 'root'

Please select: Entering Debian Edu Router configuration submenu...

Debian Edu Router Configuration
-----

a - Configure Debian Edu Router entirely
n - Configure Debian Edu Router network settings
f - Configure Debian Edu Router firewall settings
s - Configure Debian Edu Router services
m - Return back to main menu

Please select: 
```

If SSH access has been enabled the gateway can be reconfigured remotely via the menu offered when logging in as root. Pressing c in the main menu switches to the configuration menu from which all or parts of the configuration can be changed using the same dialogue system which was used for the initial configuration.

### 6.3.7 Noter om noen egenskaper

#### 6.3.7.1 En kommentar om bærbare maskiner

Sannsynligvis vil du bruke profilen «Vandrende arbeidsstasjon» (se ovenfor). Vær oppmerksom på at alle data er lagret lokalt (så vær ekstra oppmerksom på å ta sikkerhetskopier), og påloggingsinformasjonen blir lagret (så etter en endring i passord, kan pålogginger kreve ditt gamle passord hvis du ikke har knyttet din bærbare til nettverket, og logget inn med det nye passordet).

#### 6.3.7.2 A note on USB flash drive / Blu-ray disc image installs

After you install from the 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://deb.debian.org/debian/ bookworm main
deb http://security.debian.org bookworm-security main
```

### 6.3.7.3 En kommentar om CD-installasjon

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 desktop environments). 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.

### 6.3.8 Installasjon ved bruk av USB-minnepinne i stedet for CD eller Blu-ray-plate

It is possible to directly copy a CD/BD ISO image to USB flash drives (also known as "USB sticks") and boot from them. Simply execute a command like this, just adapting the file and device name to your needs:

```
sudo dd if=debian-edu-amd64-XXX.iso of=/dev/sdX bs=1M
```

For å bestemme verdien av X, kjør denne kommandoen før og etter en USB-enhet har blitt koblet til:

```
lsblk -p
```

Kopiering vil ta sin tid.

Avhengig av hvilket bilde du velger, vil USB-minnepinnen oppføre seg som en CD eller Blu-ray-disk.

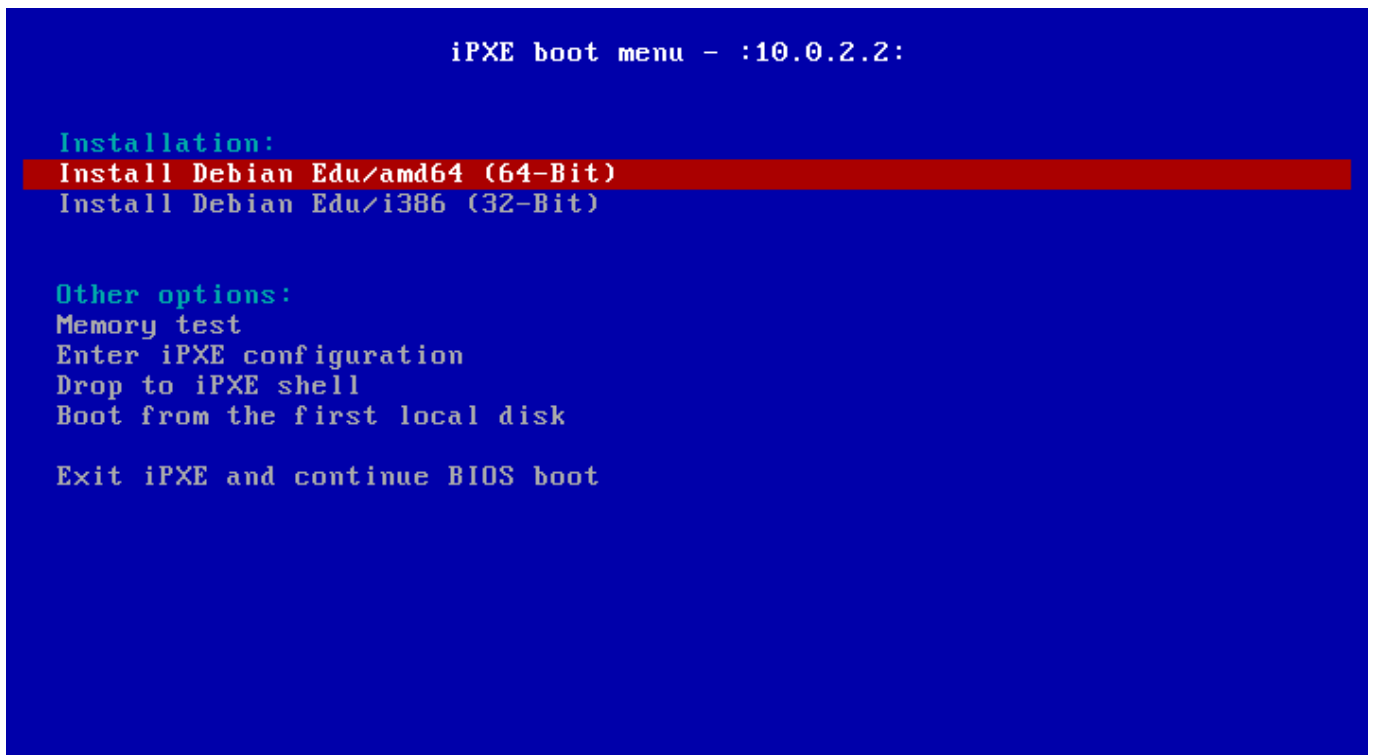
### 6.3.9 Installasjon og oppstart over nettverk med PXE

For this installation method it is required that you have a running main server. When clients boot via the network, an iPXE 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-addfirmware
```

on the server.

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



```
iPXE boot menu - :10.0.2.2:

Installation:
Install Debian Edu/amd64 (64-Bit)
Install Debian Edu/i386 (32-Bit)

Other options:
Memory test
Enter iPXE configuration
Drop to iPXE shell
Boot from the first local disk

Exit iPXE and continue BIOS boot
```

This is how the iPXE menu looks with the **LTSP Server** profile:

```
iPXE boot menu - :10.0.2.2:

Installation:
Install Debian Edu/amd64 (64-Bit)
Install Debian Edu/i386 (32-Bit)

Boot an image from the network in LTSP mode:
Plain X2Go Thin Client (64-Bit)
Diskless Workstation (server's SquashFS image)
Plain X2Go Thin Client (64-Bit, NFS rootfs)

Other options:
Memory test
Enter iPXE configuration
Drop to iPXE shell
Boot from the first local disk

Exit iPXE and continue BIOS boot
```

This setup also allows diskless workstations and thin clients to be booted on the main network. Unlike workstations and separate LTSP servers, diskless workstations don't have to be added to LDAP with GOsa<sup>2</sup>.

Mer info om nettverksklienter kan man finne i avsnittet [nettverksklienter](#).

### 6.3.10 Modifisering av PXE-installasjoner

PXE-installasjon bruker en «Debian-installer forhåndsutfyllings»fil, og denne filen kan modifiseres til å spørre etter flere pakker som skal installeres.

En linje slik som dette må legges til i `tjener:/etc/debian-edu/www/debian-edu-install.dat`

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

The PXE installation uses the preseeding file `/etc/debian-edu/www/debian-edu-install.dat`. This file 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` 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](#).

For å slå av eller endre bruken av proxy når du innstallerer fra PXE, må linjene som inneholder `mirror/http/proxy`, `mirror/ftp/proxy` og `preseed/early_command` i `tjener:/etc/debian-edu/www/debian-edu-install.dat` endres. For å slå av bruken av proxy når du installerer, sett `"#"` foran de første to linjene, og fjern `"export xhttp_proxy="http://webcachel` delen fra den siste linjen.

Some settings can not be preseeded because they are needed before the preseeding file is downloaded. Language, keyboard layout and desktop environment are examples of such settings. If you want to change the default settings, edit the iPXE menu file `/srv/tftp/ltsp/ltsp.ipxe` on the main server.

### 6.3.11 Tilpassede bilder

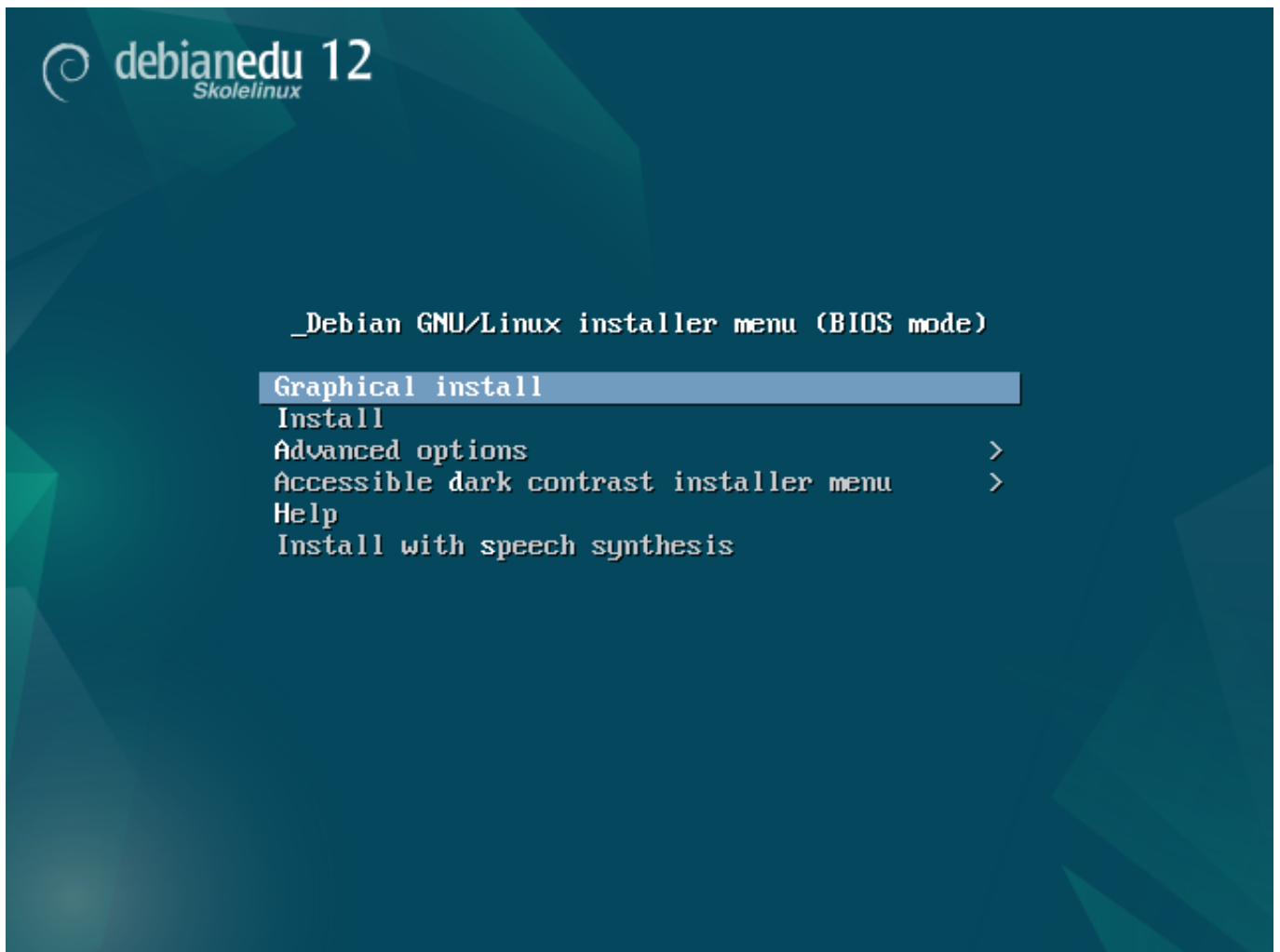
Creating custom CDs, DVDs or Blu-ray discs can be quite easy since we use the [Debian Installer](#), which has a modular design and other nice features. [Preseeding](#) allows you to define answers to the questions normally asked.


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

## 6.4 Skjermbilder av installasjonen

Tekstmodus og grafisk installasjon er identisk med tanke på innhold, kun utseendet er forskjellig, samt at man kan bruke mus ved grafisk installasjon. Den grafiske installasjonen ser selvfølgelig bedre og mer moderne ut. Hvis maskinvaren er i stand til å vise det grafiske installasjonsgrensesnittet, er det all grunn til å bruke dette.

So here is a screenshot tour through a graphical 64-bit Main Server + Workstation + LTSP Server installation (in BIOS mode) and how it looks at the first boot of the main server and a PXE boot on the LTSP client network (thin client session screen - and login screen after the session on the right has been clicked).



 **debianedu 12**  
Skolelinux


### Select a language

Choose the language to be used for the installation process. The selected language will also be the default language for the installed system.

Language:

Bosnian	-	Bosanski
Bulgarian	-	Български
Burmese	-	မြန်မာစာ
Catalan	-	Català
Chinese (Simplified)	-	中文(简体)
Chinese (Traditional)	-	中文(繁體)
Croatian	-	Hrvatski
Czech	-	Čeština
Danish	-	Dansk
Dutch	-	Nederlands
Dzongkha	-	ཇོངཀལ
<b>English</b>	-	<b>English</b>
Esperanto	-	Esperanto
Estonian	-	Eesti
Finnish	-	Suomi
French	-	Français
Galician	-	Galego
Georgian	-	ქართული
German	-	Deutsch
Greek	-	Ελληνικά
Gujarati	-	ગુજરાતી
Hebrew	-	עברית
Hindi	-	हिन्दी
Hungarian	-	Magyar

[Screenshot](#)[Go Back](#)[Continue](#)

 **debianedu 12**  
Skolelinux

### Select your location

The selected location will be used to set your time zone and also for example to help select the system locale. Normally this should be the country where you live.

This is a shortlist of locations based on the language you selected. Choose "other" if your location is not listed.

Country, territory or area:

Antigua and Barbuda

Australia

Botswana

Canada

Hong Kong

India

Ireland

Israel

New Zealand

Nigeria

Philippines

Seychelles

Singapore

South Africa

United Kingdom

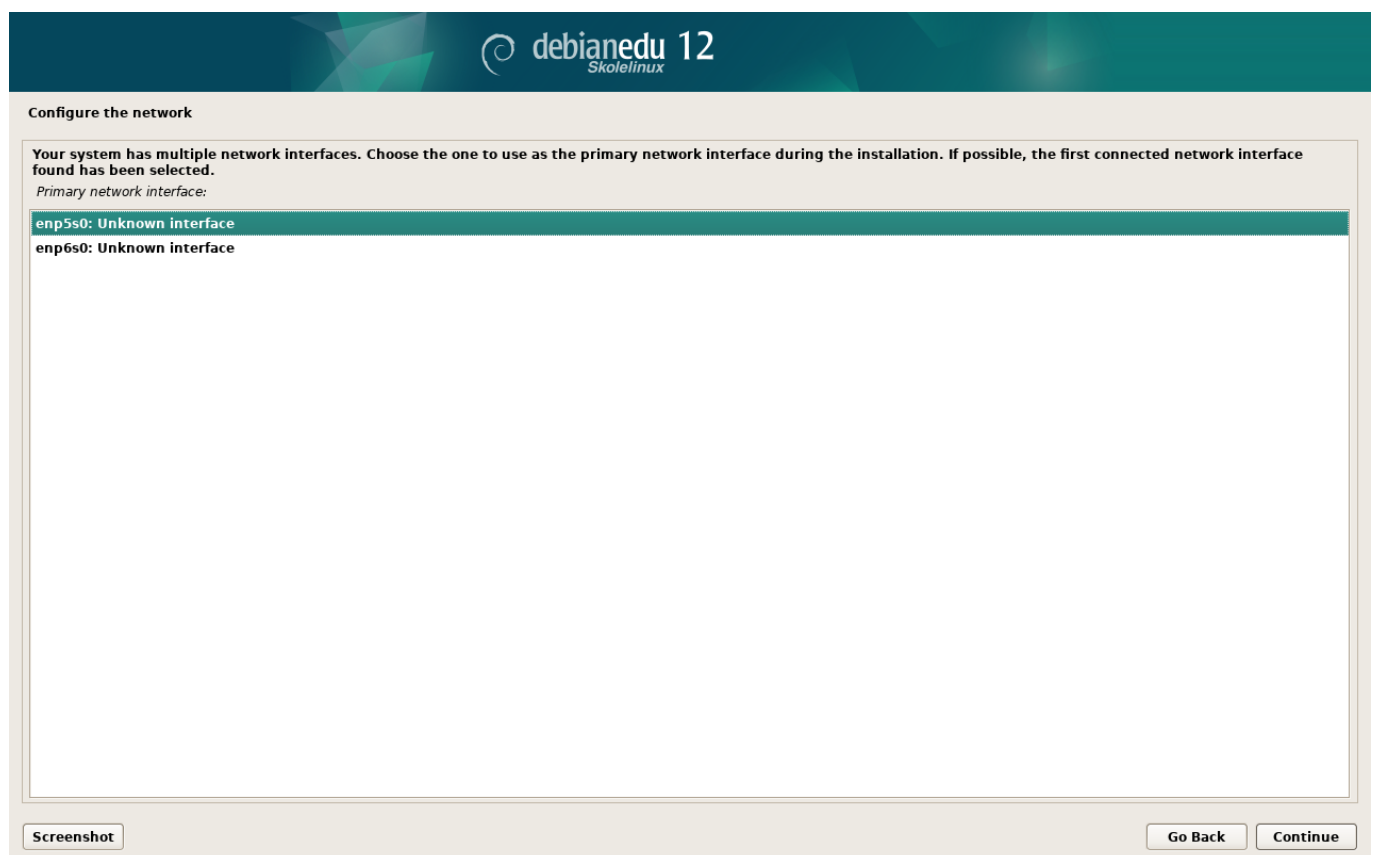
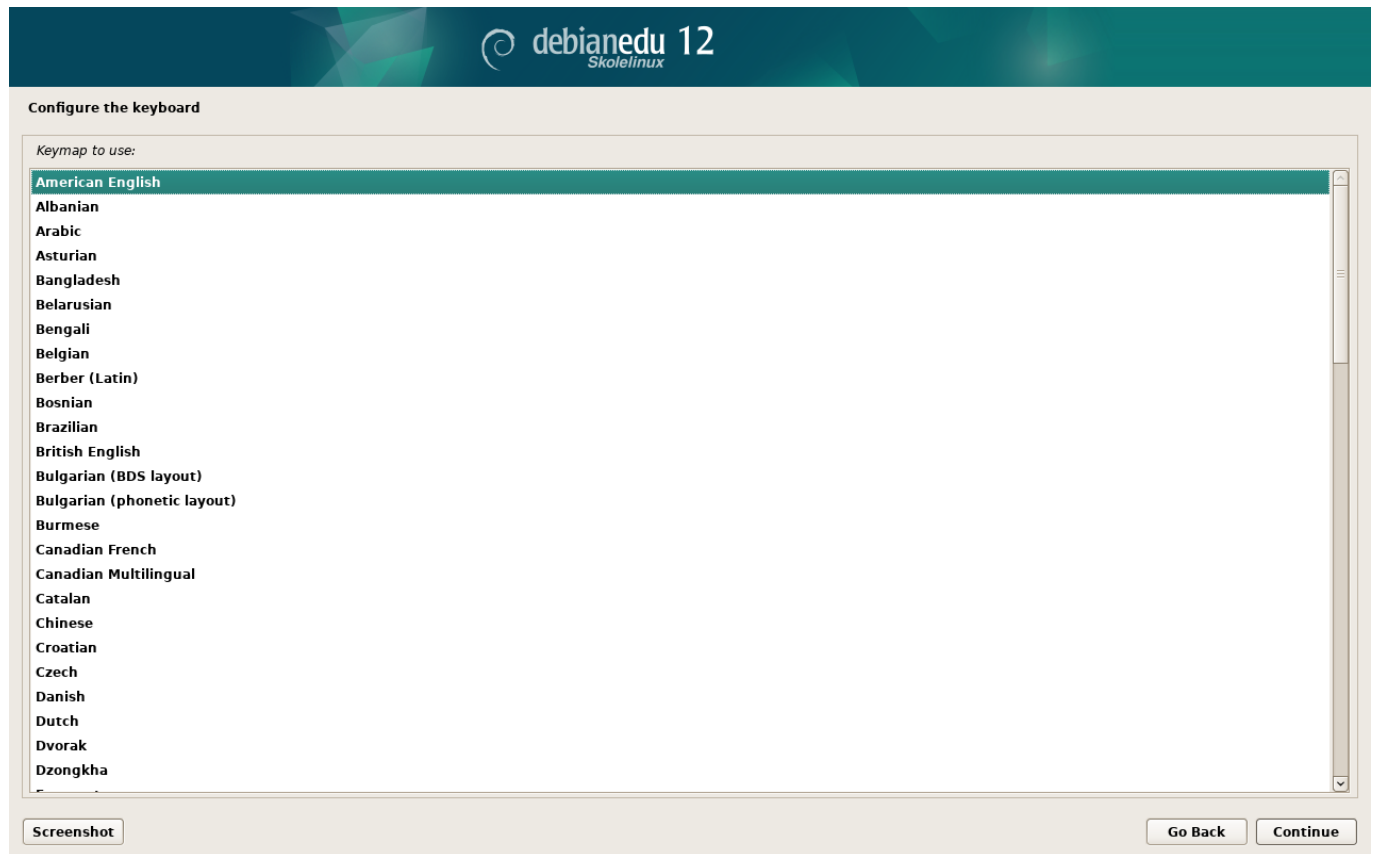
**United States**


Zambia

Zimbabwe

other

[Screenshot](#)[Go Back](#)[Continue](#)



 **debianedu 12**  
*Skolelinux*

### Configure the network

From here you can choose to retry DHCP network autoconfiguration (which may succeed if your DHCP server takes a long time to respond) or to configure the network manually. Some DHCP servers require a DHCP hostname to be sent by the client, so you can also choose to retry DHCP network autoconfiguration with a hostname that you provide.

*Network configuration method:*

Retry network autoconfiguration


Retry network autoconfiguration with a DHCP hostname

**Configure network manually**

Do not configure the network at this time

Screenshot

Go BackContinue

 **debianedu 12**  
*Skolelinux*

### Configure the network

The IP address is unique to your computer and may be:

- \* four numbers separated by periods (IPv4);
- \* blocks of hexadecimal characters separated by colons (IPv6).

You can also optionally append a CIDR netmask (such as "/24").


If you don't know what to use here, consult your network administrator.

*IP address:*

10.0.2.2/8

Screenshot

Go BackContinue


 debianedu 12  
Skolelinux

### Configure the network

The gateway is an IP address (four numbers separated by periods) that indicates the gateway router, also known as the default router. All traffic that goes outside your LAN (for instance, to the Internet) is sent through this router. In rare circumstances, you may have no router; in that case, you can leave this blank. If you don't know the proper answer to this question, consult your network administrator.

Gateway:

[Screenshot](#)[Go Back](#)[Continue](#)


 debianedu 12  
Skolelinux

### Configure the network

The name servers are used to look up host names on the network. Please enter the IP addresses (not host names) of up to 3 name servers, separated by spaces. Do not use commas. The first name server in the list will be the first to be queried. If you don't want to use any name server, just leave this field blank.

Name server addresses:

[Screenshot](#)[Go Back](#)[Continue](#)



### 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

 **debianedu 12**  
Skolelinux


**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

 **debianedu 12**  
Skolelinux

**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

 **debianedu 12**  
Skolelinux

**Participate in the package usage survey?**

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

Participate in the package usage survey?

☐ No

☒ Yes

 **debianedu 12**  
Skolelinux

**Set up users and passwords**

You need to set a password for 'root', the system administrative account. A malicious or unqualified user with root access can have disastrous results, so you should take care to choose a root password that is not easy to guess. It should not be a word found in dictionaries, or a word that could be easily associated with you.

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

The root user should not have an empty password. If you leave this empty, the root account will be disabled and the system's initial user account will be given the power to become root using the "sudo" command.

Note that you will not be able to see the password as you type it.

Root password:

●●●●●●●●●●




☐ Show Password in Clear


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

Re-enter password to verify:

●●●●●●●●●●

☐ Show Password in Clear

 **debianedu 12**  
Skolelinux


### 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:*

[Screenshot](#)[Go Back](#)[Continue](#)


 **debianedu 12**  
Skolelinux

### Set up users and passwords

Select a username for the new account. Your first name is a reasonable choice. The username should start with a lower-case letter, which can be followed by any combination of numbers and more lower-case letters.

*Username for your account:*

[Screenshot](#)[Go Back](#)[Continue](#)

 **debianedu 12**  
Skolelinux

### 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 BackContinue

 **debianedu 12**  
Skolelinux

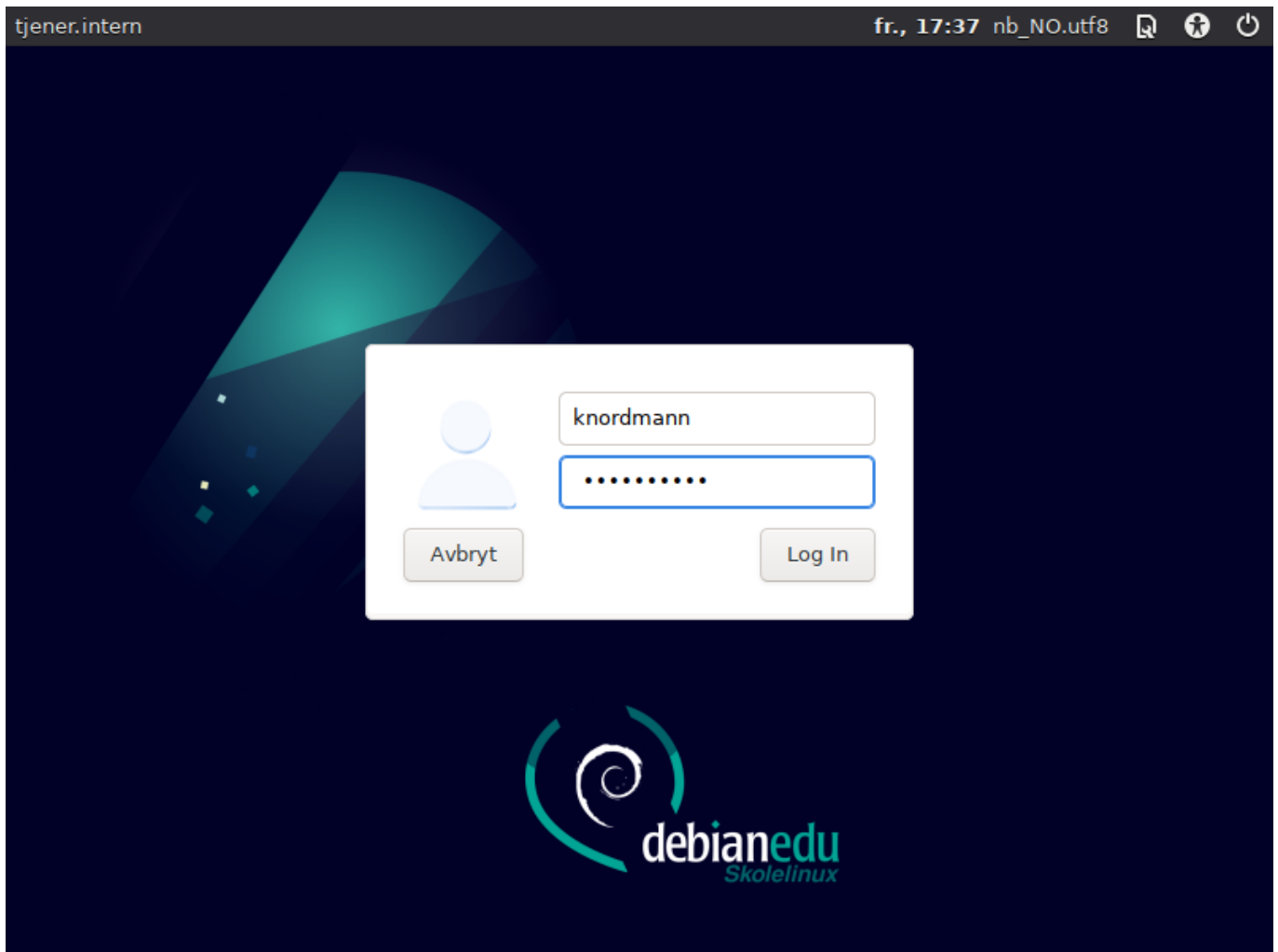
### Finish the installation



*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.  
Please choose <Continue> to reboot.

Screenshot

Go BackContinue




Programmer: Velkommen til «www»: ... fr. 26 mars, 17:39 Kari Nordmann

Velkommen til «www»: Informasjonsside for en Skolelinux-installasjon - Mozilla Firefox

Velkommen til «www»: Info: x +

https://www/index.html.nb-no

[\[català\]](#) [\[dansk\]](#) [\[Deutsch\]](#) [\[English\]](#) [\[español\]](#) [\[français\]](#) [\[Indonesia\]](#) [\[Italiano\]](#)  
[\[norsk\]](#) [\[Nederlands\]](#) [\[Português\]](#) [\[Português do Brasil\]](#) [\[Română\]](#) [\[Русский\]](#)  
[\[中文\]](#) [\[日本語\]](#)



## Velkommen til Debian Edu / Skolelinux

Hvis du kan se dette, så betyr det at installasjonen av din DebianEdu-tjener var vellykket. Gratulerer og velkommen. For å endre innholdet på denne siden, rediger `/etc/debian-edu/www/index.html.no`, i det skriveprogrammet du foretrekker.

Til høyre på denne siden ser du noen lenker som kan være hjelpsom i din jobb med å administrere et Debian Edu-nett.


- Lenkene under Lokale tjenester, er lenker til tjenester som kjører på denne tjeneren. Disse verktøyene kan bistå deg som driftsansvarlig i din daglige med Skolelinux-løsningen.
- Lenkene under Skolelinux er lenker til Skolelinuxprosjektets sider på nettet.
  - **Dokumentasjon:** Velg dette for å se på den installerte dokumentasjonen.
  - **GOsa<sup>2</sup> LDAP-administrasjon:** Velg dette for å bruke det webbaserte GOsa<sup>2</sup> LDAP-administrasjonssystem. Bruk dette for å legge til og endre brukere og maskiner.
  - **Skriveradministrasjon:** Velg dette for å administrere skriverne på wwven.
  - **Sikkerhetskopiering:** Velg dette for å bruke sikkerhetskopieringssystemet,

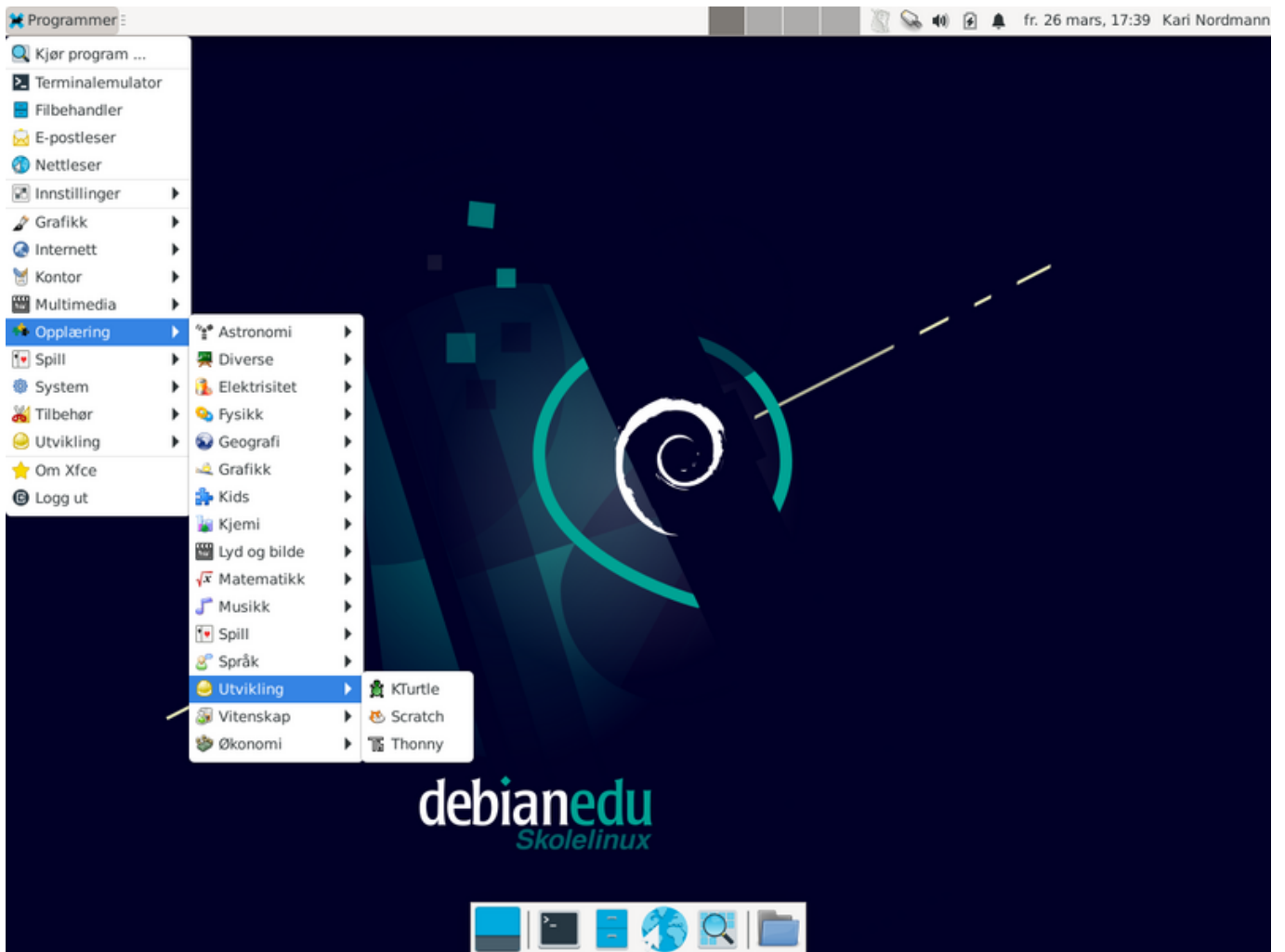
### LOKALE TJENESTER

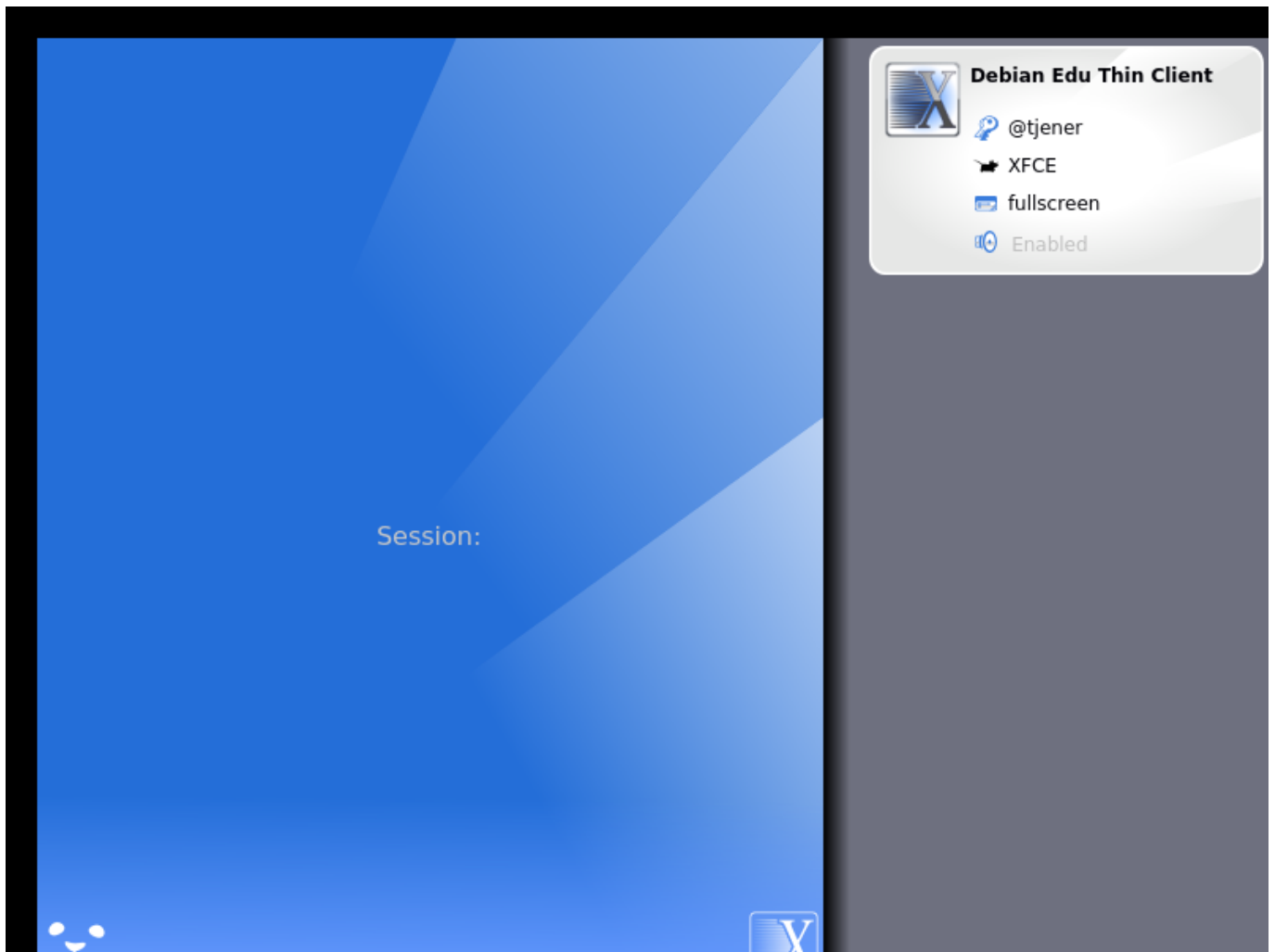
- [Dokumentasjon](#)
- [GOsa<sup>2</sup> LDAP-administrasjon](#)
- [Skriveradministrasjon](#)
- [Sikkerhetskopiering](#)
- [Icinga](#)
- [Munin](#)
- [Sitesummary](#)

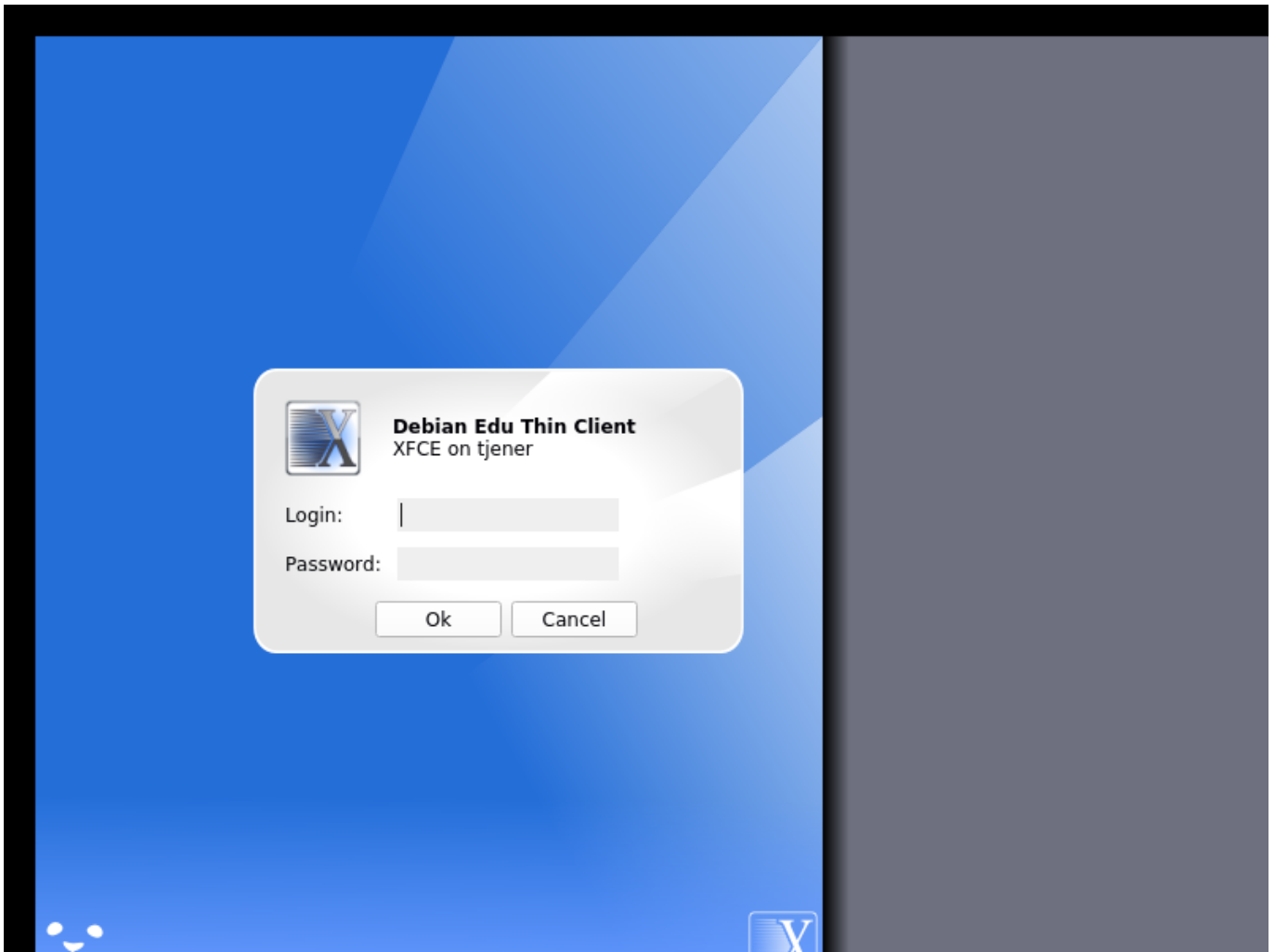
### SKOLELINUX

- [Websider](#)
- [Wikisider](#)
- [E-postlister](#)
- [Innsamlet pakkebruk](#)









## 7 Komme i gang

### 7.1 Minimumssteg for å komme i gang

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 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.

Se informasjonen om Debian Edu-spesifikke **oppsett av filsystemtilgang** før brukere legges til. Oppsett for filsystemtilgang kan tilpasses lokale regler hvis det ønskes.

Etter installasjonen, de første tingene du trenger å gjøre som den første brukeren er:

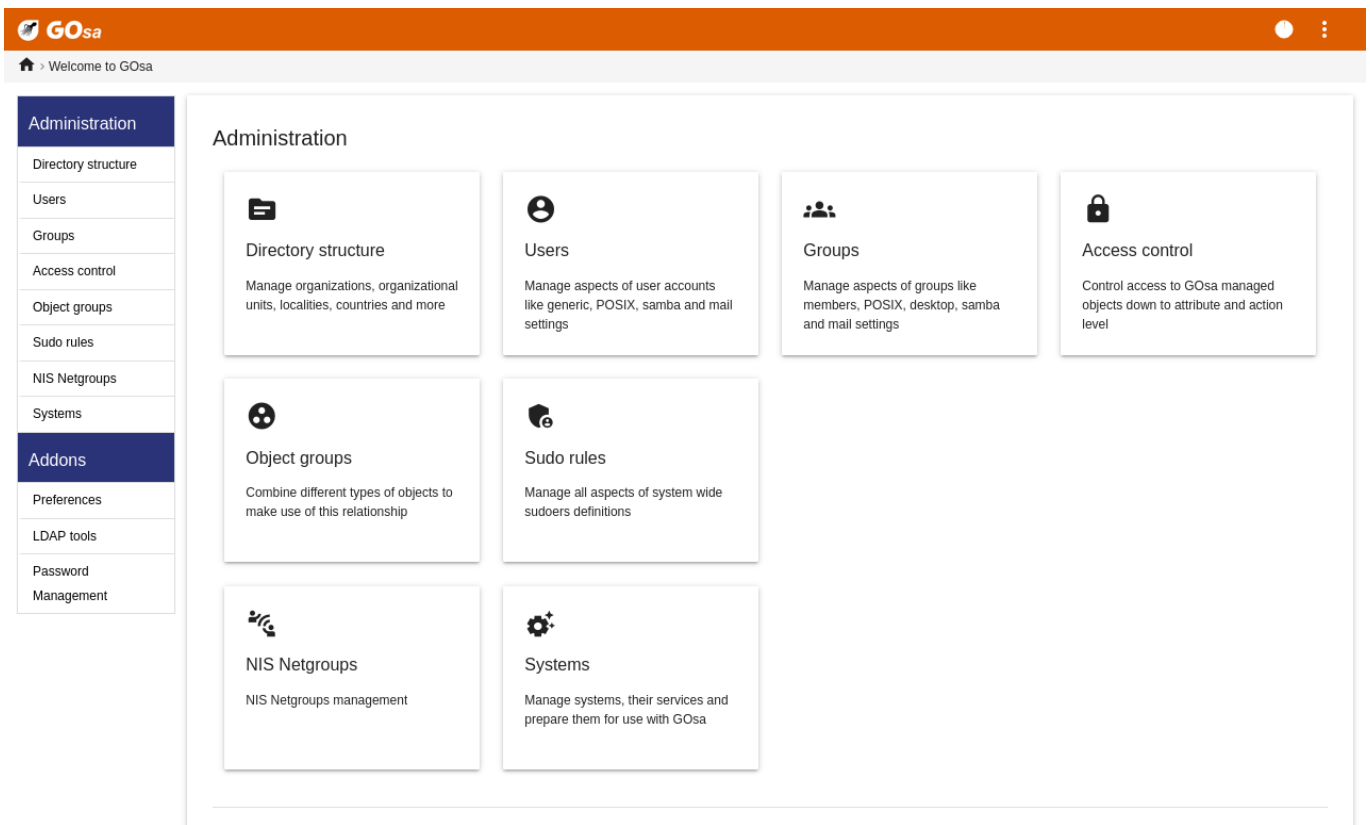
1. Logg inn på tjeneren.
2. Legg til brukere med GOsa<sup>2</sup>.
3. Add workstations with GOsa<sup>2</sup>.

Å legge til brukere og arbeidsstasjoner er beskrevet i detalj nedenfor, så vær vennlig å les dette kapittelet fullstendig. Her vises hvordan disse minimumsskrittene utføres riktig, men også annet stoff som alle kan trenge å utføre.

There is additional information available elsewhere in this manual: the **New features in Bookworm** 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.



### 7.2.1 GOsa<sup>2</sup> Login pluss oversikt



Etter å ha logget inn i GOsa<sup>2</sup>, vil du se oversiktssiden til GOsa<sup>2</sup>.

Deretter kan du velge en oppgave i menyen, eller klikke på en av oppgaveikonene på oversiktssiden. For navigering anbefaler vi å bruke menyen på venstre side av skjermen, ettersom den blir synlig på alle administrasjonssidene som ligger inne i GOsa<sup>2</sup>.

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 other 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.

GOsa<sup>2</sup> er et administrasjonsverktøy som bruker LDAP til å lagre informasjon og gi en hierarkisk avdelingsstruktur. Til hver «avdeling» kan du legge til brukerkontoer, grupper, systemer, nettgrupper etc. Avhengig av strukturen i institusjonen, kan du gjenspeile denne strukturen i LDAPs datatre på Debian Edus hovedtjener ved hjelp av GOsa<sup>2</sup>/LDAP.

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, workstations, 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.)

Avhengig av oppgaven som du vil jobbe med (administrere brukere, administrere grupper, administrere systemer, etc.), presenterer GOsa<sup>2</sup> deg for et annet syn på den valgte avdelingen (eller basenivået).

## 7.3 Brukeradministrasjon med Lwat

Først klikker du på «Brukere» («Users») i venstre navigasjonsmeny. Høyre side av skjermen vil endres for å vise en tabell med avdelingsmapper for «Studenter» («Students») og «Lærere» («Teachers»), og kontoen til GOsa<sup>2</sup> Super-Administrator (den brukeren som først ble opprettet). Ovenfor denne tabellen kan du se feltet *Base* som lar deg navigere gjennom trestrukturen


din (beveg musen over området, og en rullegardinmeny vises), og for å velge en basismappe for de planlagte oppgaver (for eksempel legge til en ny bruker).

### 7.3.1 Legge til brukere

Ved siden av treet navigasjonselementet kan du se «Handler»-menyen («Actions» menu). Beveg musen over denne, og en undermeny vises på skjermen; velg «Opprett» («Create») her, og deretter «Bruker» («User»). Du blir veiledet av brukerveiviseren.

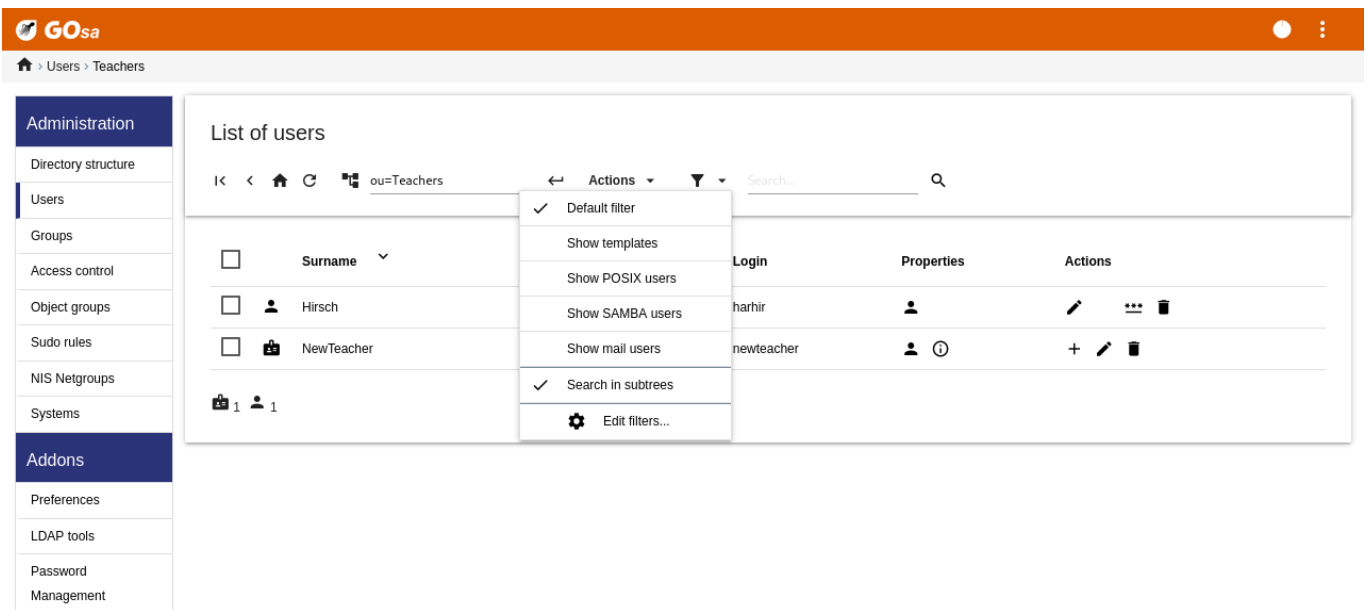
- Den viktigste tingen å legge til er malen (newstudent eller newteacher) det fulle navnet for din bruker (se bildet).
- Når du følger veiviseren, vil du se at GOsa<sup>2</sup> genererer et brukernavn automatisk basert på det virkelige navnet. Den velger automatisk et brukernavn som ikke finnes ennå, slik at flere brukere med det samme navnet/hele navnet, ikke er et problem. Merk at GOsa<sup>2</sup> kan generere ugyldige brukernavn hvis hele navnet inneholder ikke-ASCII-tegn.
- Hvis du ikke liker det genererte brukernavn, kan du velge et annet brukernavn som tilbys i drop-down boksen («rullegardinboksen»), men du har ikke et fritt valg her i veiviseren. (Hvis du ønsker å være i stand til å redigere/endre det foreslåtte brukernavnet, åpne/etc/gosa/gosa.conf med en redaktør, og legg til allowUIDProposalModification=«true» som et ekstra alternativ til «location-definisjonen».)
- Når veiviseren er ferdig, blir du presentert med GOsa<sup>2</sup>-skjermen for det nye brukerobjektet. Bruk fanene øverst for å sjekke de ferdige feltene.

Etter at du har opprettet brukeren (ikke nødvendig å tilpasse feltet veiviseren som er tomt nå), klikk på «OK»-knappen i nederste høyre hjørne.

Som det siste trinnet vil GOsa<sup>2</sup> be om et passord for den nye brukeren. Skriv det inn to ganger, og deretter «Angi passord» i nederste høyre hjørne.  Noen tegn er kanskje ikke tillatt som del av passordet.

Hvis alt gikk bra, kan du nå se den nye brukeren i brukerliste-tabellen. Du skal nå kunne logge inn med brukernavnet på en Skolelinux-maskin i nettverket.

### 7.3.2 Søk etter og slett brukere



For å endre eller slette en bruker, bruk GOSa<sup>2</sup> til å bla gjennom listen over brukere på systemet. På midten av skjermen kan du åpne «Filter»-boksen, et søkeverktøy levert av GOSa<sup>2</sup>. Hvis du ikke vet den nøyaktige plasseringen av din brukerkonto i treet ditt, endre til basisnivået av GOSa<sup>2</sup>/LDAP-treet, og søk der med alternativet merket «Søk i undertrær».

Når du bruker «Filter»-boksen, vil resultatene umiddelbart vises i midten av teksten i tabellen listevissning. Hver linje representerer en brukerkonto, og elementene lengst til høyre på hver linje er små ikoner som viser hva du kan gjøre: endre bruker, lås konto, sett passord, og fjern bruker.

En ny side vil dukke opp der du direkte kan endre informasjonen om en bruker, endre passordet til brukeren, og endre listen over grupper som brukeren tilhører.

The screenshot shows the GOSa web interface for user management. The top navigation bar is orange with the GOSa logo. Below it, a breadcrumb trail shows 'Users > harhir > Students'. A left sidebar contains a menu with 'Administration' (Directory structure, Users, Groups, Access control, Object groups, Sudo rules, NIS Netgroups, Systems) and 'Addons' (Preferences, LDAP tools, Password Management). The main content area has tabs for 'Generic', 'POSIX', 'Mail', 'ACL', and 'References'. The 'Generic' tab is active, showing the 'Personal information' section. This section includes a profile picture placeholder with a 'Change picture...' button, and various text input fields: 'Last name\*' (Hirsch), 'First name\*' (Harry), 'Login\*' (harhir), 'Personal title', 'Academic title', 'Date of birth', 'Sex' (a dropdown menu), 'Preferred language' (a dropdown menu), and 'Address'. On the right side of the form, there are fields for 'Private phone', 'Homepage', 'Password storage' (set to 'ssh'), and 'Restrict login to' (a large empty text area). At the bottom right, there is an 'Add' button for 'IP or network'. The form is styled with a clean, modern look using blue and grey colors.

### 7.3.3 Sett passord

Studentene kan endre passordet sitt ved å logge inn i GOSa<sup>2</sup> med sitt eget brukernavn. For å lette tilgangen til GOSa<sup>2</sup> er en oppføring som heter GOSa i desktop (skrivebordets) System (eller System-innstillinger)-menyen. En student som er innlogget vil bli presentert for en svært minimal versjon av GOSa<sup>2</sup> som bare gir tilgang til studentens eget konto-datablad, og til dialogboksen sett-passord (set password).

Lærere logget inn under sine egne brukernavn har spesielle privilegier i GOSa<sup>2</sup>. De har mer omfattende rettigheter i GOSa<sup>2</sup>, og kan endre passord for alle studentkonti. Dette kan være svært nyttig i timene.

For å administrativt gi en bruker et nytt passord

1. Søk etter brukeren, som skal modifiseres, som beskrevet ovenfor
2. Klikk på nøkkelsymbolet ved slutten av linjen som brukernavn er vist i
3. På den påfølgende siden kan du sette et nytt passord som du selv velger



Det er lurt å teste først med en CSV-fil med noen få fiktive brukere som kan slettes senere.

Same applies to the password management module, which allows one to reset a lot of passwords using a CSV file or to re-generate new passwords for users belonging to a special LDAP subtree.

The screenshot shows the GOSa web interface. The top navigation bar is orange with the 'GOsa' logo and a home icon. Below it, a breadcrumb trail reads 'Welcome to GOSa'. A left sidebar contains two main sections: 'Administration' (with links to Directory structure, Users, Groups, Access control, Object groups, Sudo rules, NIS Netgroups, and Systems) and 'Addons' (with links to Preferences, LDAP tools, Password Management, and Management). The main content area is titled 'Reset Passwords' and contains a section 'Configure password reset options' with an information icon. Below this, a message says 'Please configure options for this run of resetting user credentials.' There are two radio button options: 'Upload a credentials file (CSV format)' (selected) and 'Reset passwords of accounts in a certain organizational unit of the LDAP tree.' Under the first option, the 'File format' is specified as 'CSV, comma-separated, no quotes, two columns:' and a text box shows the format '<uid>, <userPassword>'. A 'Browse' button is next to the text 'Select CSV file for uploading:'. Under the second option, there is a dropdown menu for 'Change passwords for accounts in this OU subtree:' currently set to 'skole - Debian-Edu', and another dropdown for 'Length of auto-generated passwords:' set to '12'. A 'Review upcoming password resets' button is at the bottom right.

#### 7.3.4.1 Adding users from the command line

User accounts can also be added from the command line using the `ldap-createuser-krb5` tool, see the documentation in the [Administration HowTo](#)

## 7.4 Gruppeadministrasjon med GOsa<sup>2</sup>

GOsa

Groups

Administration

Directory structure

Users

Groups

Access control

Object groups

Sudo rules

NIS Netgroups

Systems

Addons

Preferences

LDAP tools

Password Management

Generic

Mail

ACL

References

Group name\*  
class\_22\_2026

Description  
Class 22 graduating in 2026

Force GID

Samba group

in domain  
DEFAULT

Group members

~

Add

System trust

Trust mode  
disabled

~

OK

Cancel

GOsa

Groups

Administration

Directory structure

Users

Groups

Access control

Object groups

Sudo rules

NIS Netgroups

Systems

Addons

Preferences















LDAP tools

Password Management

List of groups

Actions


Search...

	Name	Description	Properties	Actions
	Students [all students]			
	Teachers [all teachers]			
<input type="checkbox"/>	class_22_2026	Class 22 graduating in 2026		 
<input type="checkbox"/>	gosa-admins	GOsa <sup>2</sup> Administrators		 
<input type="checkbox"/>	icinga-admins	Icinga Administrators		 
<input type="checkbox"/>	jradmins	All junior admins in the institution		 
<input type="checkbox"/>	nonetbik	Users that should be unaffected by network blocking		 
<input type="checkbox"/>	printer-admins	Printer Operators		 
<input type="checkbox"/>	server-admin	Group of user server-admin		 

2

7



 **GOsa**

Systems

**Administration**  
Directory structure  
Users  
Groups  
Access control  
Object groups  
Sudo rules  
NIS Netgroups  
**Systems**  
**Addons**  
Preferences  
LDAP tools  
Password Management

### List of systems

Navigation icons

Actions

Search...

	Name	Description	Release	Actions
<input type="checkbox"/>	Students [all students]			
<input type="checkbox"/>	Teachers [all teachers]			
<input type="checkbox"/>	gateway			
<input type="checkbox"/>	tjener	Main server; modify only if 100% sure.		
<input type="checkbox"/>	ws001	Workstation		

2 1 1 1

Systems am-2211334455ff My account Change password

Generic **NIS Netgroup** ACL References

#### Properties

Workstation name\* am-2211334455ff

Description

Location

Base\* /

Mode Activated

Syslog server default

☐ Inherit time server attributes NTP server

ntp

tjener Add Delete

#### Network settings

IP-address 10.0.16.21 Propose IP

MAC-address\* 22:11:33:44:55:ff Auto detect

☐ Enable DHCP for this device

☐ Enable DNS for this device

GOsa

Systems > ws001

Administration

Directory structure

Users

Groups

Access control

Object groups

Sudo rules

NIS Netgroups

Systems

Addons

Preferences

LDAP tools

Password Management

GenericNIS NetgroupACLReferences

Properties

Workstation name\*  
ws001

Description  
Workstation

Location

Base\*  
/

Mode  
Activated

Syslog server  
default

☐ Inherit time server attributes

NTP server  
tjener

Add

Delete

Network settings

IP-address\*  
10.0.2.20

Propose IP

+

MAC-address\*  
00:16:3e:d7:d7:b9

Auto detect

OK

Apply

Cancel

GOsa

Systems > ws001 > unconfigured

Administration

Directory structure

Users

Groups

Access control

Object groups

Sudo rules

NIS Netgroups

Systems

Addons

Preferences

LDAP tools

Password Management

Please select the desired NIS Netgroups

I < > Home Refresh /

▼ Search...

Q

<input type="checkbox"/>	Common name	Description
<input type="checkbox"/>	Students [all students]	
<input type="checkbox"/>	Teachers [all teachers]	
<input type="checkbox"/>	all-hosts	All netgroup members
<input type="checkbox"/>	cups-queue-autoflush-hosts	Flush CUPS print queues automatically every night
<input type="checkbox"/>	cups-queue-autoreenable-hosts	Re-enable CUPS print queues automatically every hour
<input type="checkbox"/>	diskless-workstation-hosts	All diskless workstations
<input type="checkbox"/>	fsautoresize-hosts	Run debian-edu-fsautoresize automatically
<input type="checkbox"/>	ltsp-server-hosts	All LTSP-servers
<input type="checkbox"/>	netblock-hosts	Hosts where network blocking should be enabled
<input type="checkbox"/>	printer-hosts	All machines with a printer
<input type="checkbox"/>	...	...

2

12

OK

Cancel

En cron-jobb oppdaterer DNS en gang i timen. Benytt kommandoen `su -c ldap2bind` for å kjøre oppdateringen manuelt.

### 7.5.1 Søk og slett maskiner

Søk etter, og slette maskiner er ganske likt søking og sletting av brukere, så den informasjonen blir ikke gjentatt her.

### 7.5.2 Endre eksisterende maskiner / nettgruppehåndtering

Etter å ha lagt til en maskin til LDAP-treet ved bruk av LWAT, kan du endre maskinens egenskaper ved å bruke søkefunksjonaliteten og klikke på den oppføringen du vil endre (slik du ville gjort med brukere).

Skjemaet som du får ved å klikke på en maskinlenke er på en måte likt det du allerede kjenner fra redigering av brukeroppføringer. På en annen måte har informasjonen andre betydninger i denne konteksten.

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.

Kall den `ExcludeProfileDirs`

- `all-hosts`
- `cups-queue-autoflush-hosts`
- `cups-queue-autoreenable-hosts`
- `fsautoresize-hosts`
- `ltsp-server-hosts`
- `netblock-hosts`
- `printer-hosts`
- `server-hosts`
- `shutdown-at-night-hosts`
- `shutdown-at-night-wakeup-hosts-blacklist`
- `workstation-hosts`

Currently the `NetGroup` functionality is used for:

- **Resizing partitions** (`fsautoresize-hosts`)
  - Maskiner med Skolelinux/Debian Edu i denne gruppen vil automatisk justere størrelsen på LVM-partisjoner som får for liten plass.
- **Shutdown machines at night** (`shutdown-at-night-hosts` and `shutdown-at-night-wakeup-hosts-blacklist`)
  - Maskiner med Skolelinux/Debian Edu i denne gruppen vil automatisk slå seg av om natten for å spare energi.
- **Managing printers** (`cups-queue-autoflush-hosts` and `cups-queue-autoreenable-hosts`)
  - Maskiner med Skolelinux/Debian Edu i denne gruppen vil automatisk slå seg av om natten for å spare energi.
- **Blocking Internet access** (`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.



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

It is also a good idea to upgrade using the `C` locale to get English output which in cases of problems is more likely to produce results in search engines.

```
LC_ALL=C apt full-upgrade -y
```

After upgrading the `debian-edu-config` package, changed Cfengine configuration files might be available. Run `ls -ltr /etc/cfengine3/debian-edu/` to check if this is the case. To apply the changes, run `LC_ALL=C cf-agent -D installation`.

It is important to run `debian-edu-ltsp-install --diskless_workstation yes` after LTSP server upgrades to keep the SquashFS image for diskless clients in sync.

After a point release upgrade of a system with *Main Server* or *LTSP Server* profile, `debian-edu-pxeinstall` needs to be run to update the PXE installation environment.

Det er også en god idé å installere `cron-apt` og `apt-listchanges`, og sette dem opp til å sende e-post til en adresse du leser.

`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 full-upgrade`.

Automatic installation of updates can be done easily if desired, it just needs the `unattended-upgrades` package to be installed and configured as described on [wiki.debian.org/UnattendedUpgrades](https://wiki.debian.org/UnattendedUpgrades).

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

### 11.1.1 Hold deg oppdatert vedrørende sikkerhetsoppdateringer

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 Håndtering av sikkerhetskopier

For å håndtere sikkerhetskopier går du med nettleseren til adressen <https://www.slbackup-php>. Vær oppmerksom på at du trenger tilgang til dette nettstedet via SSL, ettersom du må skrive inn root-passordet der. Hvis du prøver å få tilgang til dette nettstedet uten å bruke SSL, vil det mislykkes.



Note: the site will only work if you temporarily allow SSH root login on the backup server, which is the main server (tjener.intern) by default.

By default, backups of `/skole/tjener/home0`, `/etc/`, `/root/.svk` and LDAP are stored in the `/skole/backup/` directory which is managed as separate partition by LVM. If you only want to have spare copies of things (in case you delete them) this setup should be fine for you.



Vær oppmerksom på at denne sikkerhetskopieringsmekanismen ikke beskytter deg mot harddisker som går i stykker.

Hvis du vil sikkerhetskopiere dine data til en ekstern tjener, en tape-stasjon eller en annen harddisk, så må du endre oppsettet litt.

Hvis du ønsker å gjenopprette en komplett folder, anbefales det å bruke kommandolinja:

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











### 14.2.1 Håndtering av logiske dataområder

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](#).

For å utvide et logisk volum manuelt forteller du ganske enkelt `lvextend`-kommandoen hvor stort du vil det skal vokse til. For eksempel, for å utvide `home0` til 30 GiB kan du bruke følgende kommandoer:

```
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 Bruk av maskinregler

`ldapvi` er et verktøy for å redigere LDAP databasen med en vanlig tekstredigerer fra kommandolinjen.

Følgende må utføres:

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

Merk: `ldapvi` vil bruke det som måtte være standard editor (standardredigeringsprogram). Ved å kjøre `export EDITOR=vim` i skallets kommandolinje kan man konfigurere miljøet for å få en vi-klone som editor.



NB: lokale enheter med `ltspfs` vil ikke fungere lenger uten LDM.

## 14.4 Kerberisert NFS

Using Kerberos for NFS to mount home directories is a security feature. Workstations and LTSP clients won't work without Kerberos. The levels `krb5`, `krb5i` and `krb5p` are supported (`krb5` means Kerberos authentication, *i* stands for integrity check and *p* for privacy, i.e. encryption); the load on both server and workstation increases with the security level, `krb5i` is a good choice and has been chosen as default.

### 14.4.1 Hvordan endre forvalget

#### Main server

- login as root
- run `ldapvi -ZD '(cn=admin)'`, search for `sec=krb5i` and replace it with `sec=krb5` or `sec=krb5p`.
- edit `/etc/exports.d/edu.exports` and adjust these entries accordingly:

```
/srv/nfs4      gss/krb5i(rw, sync, fsid=0, crossmnt, no_subtree_check)
/srv/nfs4/home0 gss/krb5i(rw, sync, no_subtree_check)
```

- run `exportfs -r`.

## 14.5 Standardskriver

Dette verktøyet tillater valg av forvalgt skriver, avhengig av plassering, maskin, eller gruppedlemskap. For mer info, se `/usr/share/doc/standardskriver/README.md`.

The configuration file `/etc/standardskriver.cfg` has to be provided by the admin, see `/usr/share/doc/standardskriver/ex` as an example.

## 14.6 JXplorer, en LDAP GUI

Hvis du foretrekker et grafisk grensesnitt for å jobbe med LDAP-databasen, ta en titt på `jxplorer`-pakken, som er tilgjengelig ut av boksen. For å få skrivetilgang, koble til på denne måten:

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

## 14.7 ldap-createuser-krb5, a command-line tool for adding users

`ldap-createuser-krb5` is a small command line tool to create user accounts, it is invoked as follows:

```
ldap-createuser-krb5 [-u uid] [-g gid] [-G group[,group]...] [-d department] <username> < ↵
gecos>
```

All arguments except the username and GECOS field are optional, the latter usually should contain the full name of the user. Unless specified the tool will pick the next free UID and GID automatically and not assign any additional groups to the user. If no department is given, it will pick the first *gosaDepartment* from LDAP which is likely *skole* and for regular users usually not what you want, so you should pick an appropriate value for the user, e.g. *Teachers* or *Students*. After entering and confirming the password and entering the LDAP administrator password, `ldap-createuser-krb5` will create the user account in LDAP, set the Kerberos password, create the home directory, and add a corresponding Samba user. The following screenshot shows an example invocation to create a user account named `harhir` for a teacher whose full name is "Harry Hirsch":

```
root@tjener:~# ldap-createuser-krb5 -d Teachers harhir "Harry Hirsch"
new user password:
confirm password:

dn: uid=harhir,ou=people,ou=Teachers,dc=skole,dc=skolelinux,dc=no
changetype: add
objectClass: top
objectClass: person
objectClass: organizationalPerson
objectClass: inetOrgPerson
objectClass: gosaAccount
objectClass: posixAccount
objectClass: shadowAccount
objectClass: krbPrincipalAux
objectClass: krbTicketPolicyAux
sn: Harry Hirsch
givenName: Harry Hirsch
uid: harhir
cn: Harry Hirsch
userPassword: {CRYPT}$y$j9T$TWnq5501rvyLhjF.$oVf.t.RXC1v/4Y8FhV0umno629mo7bP7/YJyig6HET6
homeDirectory: /skole/tjener/home0/harhir
loginShell: /bin/bash
uidNumber: 1004
gidNumber: 1004
gecos: Harry Hirsch
shadowLastChange: 19641
shadowMin: 0
shadowMax: 99999
shadowWarning: 7
krbPwdPolicyReference: cn=users,cn=INTERN,cn=kerberos,dc=skole,dc=skolelinux,dc=no
krbPrincipalName: harhir@INTERN

ldap_initialize( <DEFAULT> )
Enter LDAP Password:
```

```

add objectClass:
    top
    person
    organizationalPerson
    inetOrgPerson
    gosaAccount
    posixAccount
    shadowAccount
    krbPrincipalAux
    krbTicketPolicyAux
add sn:
    Harry Hirsch
add givenName:
    Harry Hirsch
add uid:
    harhir
add cn:
    Harry Hirsch
add userPassword:
    {CRYPT}$y$j9T$TWnq5501rvyLhjF.$oVf.t.RXC1v/4Y8FhV0umno629mo7bP7/YJyig6HET6
add homeDirectory:
    /skole/tjener/home0/harhir
add loginShell:
    /bin/bash
add uidNumber:
    1004
add gidNumber:
    1004
add gecos:
    Harry Hirsch
add shadowLastChange:
    19641
add shadowMin:
    0
add shadowMax:
    99999
add shadowWarning:
    7
add krbPwdPolicyReference:
    cn=users,cn=INTERN,cn=kerberos,dc=skole,dc=skolelinux,dc=no
add krbPrincipalName:
    harhir@INTERN
adding new entry "uid=harhir,ou=people,ou=Teachers,dc=skole,dc=skolelinux,dc=no"
modify complete

```

```

Authenticating as principal root/admin@INTERN with password.
kadmin.local: change_password harhir@INTERN
Enter password for principal "harhir@INTERN":
Re-enter password for principal "harhir@INTERN":
Password for "harhir@INTERN" changed.
kadmin.local: lpcfg_do_global_parameter: WARNING: The "encrypt passwords" option is deprecated
Added user harhir.

```

## 14.8 Bruk av stabile oppdateringer

Selv om du kan bruke stable-updates direkte, trenger du det ikke; stable-updates blir lagt inn i den stabile utgaven regelmessig når stabile versjoner blir laget, noe som grovt sett skjer hver annen måned.



## 14.13 Automatisk nedstengning av maskiner for natten

It is possible to save energy and money by automatically turning client machines off at night and back on in the morning. The package `shutdown-at-night` 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.

Det er noen vurderinger man må gjøre før man gjør dette:

- 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 SSH connection command to work with X2Go thin clients.
- For å unngå at sikringer går, så er det en god idé å sørge for at ikke alle klientene starter på samme tid.
- 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 `nvrwakeup`; 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.

### 14.13.1 Slik setter du opp `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-generator` to generate the list of clients on the fly.

Her er et eksempel på `/etc/shutdown-at-night/clients-generator` for bruk sammen med `Sitesummary`:

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

Et alternativ hvis nettgruppen er brukt for å aktivere `shutdown-at-night` på klienter, er dette skriptet som bruker nettgruppeverktøyet fra `ng-utils`-pakken:

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

## 14.14 Access Debian Edu servers located behind a firewall

For å få tilgang til maskiner bak en brannvegg fra Internett, vurder å installere pakken: `autossh`. Den kan brukes til å sette opp en SSH-tunnel til en maskin på Internett som du har tilgang til. Fra den maskinen, kan du få tilgang til en tjener bak brannveggen via SSH-tunnelen.

## 14.15 Installing additional service machines for spreading the load from the main server

In the default installation, all services are running on the main server, hostname *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).

Disse skrittene kreves for å sette opp en maskin som skal utføre noen/bestemte tjenester:

- choose the *Minimal* profile during installation
- Installer pakkene for tjenesten
- Sette opp tjenesten
- disable the service on the main server
- update DNS (via LDAP/GOSA<sup>2</sup>) on the main server

## 14.16 Veiledninger fra wiki.debian.org

FIXME: The HowTos from <https://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.)

- <https://wiki.debian.org/DebianEdu/HowTo/AutoNetRespawn>
- <https://wiki.debian.org/DebianEdu/HowTo/BackupPC>
- <https://wiki.debian.org/DebianEdu/HowTo/ChangeIpSubnet>
- <https://wiki.debian.org/DebianEdu/HowTo/SiteSummary>
- [https://wiki.debian.org/DebianEdu/HowTo/Squid\\_LDAP\\_Authentication](https://wiki.debian.org/DebianEdu/HowTo/Squid_LDAP_Authentication)

## 15 Avansert administrasjon, oppskrifter

Dette kapittelet beskriver avanserte administratoroppgaver.

### 15.1 Brukeradministrasjon med Lwat

#### 15.1.1 Lage brukere i årsgrupper

In this example we want to create users in year groups, with common home directories for each group (home0/2024, home0/2026, etc). We want to create the users by csv import.

(som rot på hovedtjeneren)

- Lage de nødvendige årsgruppe-mapper

```
mkdir /skole/tjener/home0/2024
```

(som første bruker i Gosa)

- Avdeling
-

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 (2024) and Description fields (students graduating in 2024), leave the Base field as is (should be '/Students'). Save it clicking 'Ok'. Now the new department (2024) should show up below /Students. Click it.

- Gruppe

Choose 'Groups' from the main menu; 'Actions'/'Create/Group. Enter group name (leave 'Base' as is, should be /Students/2024) and 'Ok' to save it.

- Mal

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 and POSIX tabs, maybe take screenshots to have information ready for the new template.

Now change to /Students/2024 in the Base field; choose Create/Template and start to fill in your desired values, first the Generic tab (add your new 2024 group under Group Membership, too), then add the POSIX account.

- Importer brukere

Velg din nye mal når du importerer CSV-er. Det anbefales å teste med noen få brukere først.

## 15.2 Andre brukertilpasninger

### 15.2.1 Oppretter en mappe på alle brukeres hjemmeområde

Med dette skriptet kan administrator opprette en mappe på hver brukers hjemmeområde, og sette tilgangsrettigheter og eierskap.

I eksemplet nedenfor med `gruppe=teachers` (gruppe-lærere) og `tillatelser=2770`, kan en bruker levere inn en oppgave ved å lagre fila i mappa «oppgaver» («assignments») der lærerne har fått skrive tilgang slik at de kan legge til kommentarer.

```
#!/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/$shared_folder
        user=$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"
```



### 15.4.1 Oppsett uten LTSP-klienter

Hvis ingen LTSP-klienter er i bruk, så er en enkel løsning å lage en ny gruppe (la oss si `sshusers`), og så å legge til en linje til filen over maskiner `/etc/ssh/sshd_config`. Bare medlemmer i gruppen `sshusers` vil kunne logge seg på med SSH fra andre maskiner.

Håndtering av dette tilfellet er ganske enkelt med GOsa:

- Lag en gruppe `sshusers` på basenivået (hvor allerede de andre systemadministrasjonsrelaterte grupper som `gosa-admins` viser seg).
- `git pull`.
- Legg `AllowGroups sshusers` til `/etc/ssh/sshd_config`.
- Kall den `ExcludeProfileDirs`.

### 15.4.2 Lyd med LTSP-klienter

The default LTSP diskless client setup doesn't use SSH connections. Update the SquashFS image on the related LTSP server after the SSH setup has been changed is enough.

X2Go thin clients are using SSH connections to the related LTSP server. So a different approach using PAM is needed.

- Skru på `pam_access.so` i LTSP-serverens fil `/etc/pam.d/sshd`.
- Sett opp `/etc/security/access.conf` til å tillate oppkoblinger for (eksempel) brukere `alice`, `jane`, `bob` og `john` for alle, og alle andre brukere bare for internt nettverk ved å legge til disse tre linjene:

```
+ : 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 En merknad for mer kompliserte oppsett

If X2Go clients were attached to the backbone network `10.0.0.0/8`, 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 Veiledninger for skrivebordet

### 16.1 Sett opp et flerspråklig skrivebordsmiljø

To support multiple languages these steps need to be done:

- Kjør `dpkg-reconfigure locales` (som `root`) og velg språkene (UTF-8 -varianter).
- Kjør disse kommandoene som `root` for å installere de relaterte pakkene:



- `debian-edu-ltsp-install --diskless_workstation yes` updates the diskless workstation SquashFS image (server filesystem).
- `debian-edu-ltsp-install --diskless_workstation yes --thin_type bare` creates diskless workstation and 64-bit thin client support.
- `debian-edu-ltsp-install --arch i386 --thin_type bare` creates additional 32-bit thin client support (chroot and SquashFS image).

Besides *bare* (smallest thin client system), also *display* and *desktop* are available options. The *display* type offers a shutdown button, the *desktop* type runs Firefox ESR in kiosk mode on the client itself (more local RAM and CPU power required, but server load reduced).

The **debian-edu-ltsp-pxe** tool is a wrapper script for `ltsp pxelinux`. It makes sure that the `/srv/tftp/ltsp/ltsp.pxe` file is Debian Edu specific. The command needs to be run after iPXE menu related items (like menu timeout or default boot settings) in the `/etc/ltsp/ltsp.conf [server]` section have been modified.

The **debian-edu-ltsp-initrd** tool is a wrapper script for `ltsp initrd`. It makes sure that a use case specific initrd (`/srv/tftp/ltsp/ltsp.img`) is generated and then moved to the use case related directory. The command needs to be run after the `/etc/ltsp/ltsp.conf [clients]` section has been modified.

The **debian-edu-ltsp-chroot** tool is a replacement for the *ltsp-chroot* tool shipped with LTSP5. It is used to execute commands in a specified LTSP chroot (like e.g. install, upgrade and remove packages).

### Diskløs arbeidsstasjon

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, but runs on the diskless workstations. 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 costs as with thin clients.

Unlike workstations diskless workstations run without any need to add them with GOSa<sup>2</sup>.

### Tynnklient

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 via PXE without using a local client hard drive and that the LTSP server needs to be a powerful machine.

Debian Edu still supports the use of thin clients to enable the use of very old hardware.



Since Thin clients use X2Go, users should disable compositing to avoid display artefacts. In the default case (Xfce desktop environment): Settings -> Window Manager Tweaks -> Compositor.

### Tynnklient

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 LTSP server's initrd.

Proceed like this on the LTSP server:

- First get information about firmware packages, run:

```
apt update && apt search ^firmware-
```

- Decide which package has to be installed for the network interface(s), most probably this will be `firmware-linux`, run:

```
apt -y -q install firmware-linux
```

- Update the SquashFS image for diskless workstations, run:

```
debian-edu-ltsp-install --diskless_workstation yes
```

- In case X2Go thin clients are used, run:

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

- and proceed according to the usage information.

Then update the SquashFS image; e.g. for the `/srv/ltsp/x2go-bare-amd64` chroot, run:

```
ltsp image x2go-bare-amd64
```

### 17.1.1 Velg type installasjon

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 subnet (a separate subnet for each LTSP server).

In both cases *diskless workstation* or *thin client* can be chosen from the iPXE menu. After waiting for 5 seconds, the machine will boot as diskless workstation.

The default iPXE boot menu item and its default timeout can both be configured in `/etc/ltsp/ltsp.conf`. A timeout value of `-1` is used to hide the menu. Run `debian-edu-ltsp-ipxe` for the changes to take effect.

### 17.1.2 Bruk et annet nettverksoppsett for LTSP-tynnklienter

192.168.0.0/24 er standard LTSP-tjenernettverk hvis maskinen er installert med LTSP-profilen. Hvis mange LTSP-klienter brukes, eller hvis forskjellige LTSP-tjenere skal betjene både i386 og AMD64 chroot-miljø, kan det andre nettoppsettet også brukes: 192.168.1.0/24. Rediger filen `/etc/network/interfaces`, og juster `eth1`-innstillingene i tråd med dette. Bruk `ldapvi`, eller en annen LDAP-tekstredigerer for å se igjennom DNS- og DHCP-oppsettet.

### 17.1.3 Legg til LTSP-chroot for å støtte 32-biters PC-klienter

To create chroot and SquashFS image, run:

```
debian-edu-ltsp-install --arch i386 --thin_type bare
```

See `man debian-edu-ltsp-install` for details about thin client types.

### 17.1.4 LTSP client configuration

Run `man ltsp.conf` to have a look at available configuration options. Or read it online: <https://ltsp.org/man/ltsp.conf/>

Add configuration items to the `/etc/ltsp/ltsp.conf` [clients] section. For the changes to take effect, run:

```
debian-edu-ltsp-initrd
```

### 17.1.5 Lyd med LTSP-klienter

Tynne LTSP-klienter bruker nettverkslyd for å sende lyd fra tjeneren til klientene.

LTSP-diskløse arbeidsstasjoner håndterer lyd lokalt.



## 17.3 Endre nettverksoppsett

Pakken `debian-edu-config` kommer med et verktøy som hjelper til med å endre nettverket fra 10.0.0.0/8 til et annet. Se på `/usr/share/debian-edu-config/tools/subnet-change`. Den er beregnet for bruk rett etter installasjon på hovedtjener for å oppdatere LDAP og andre filer som må redigeres for å endre subnettet.



Merk at endring til ett av de subnett som allerede brukes andre steder i Debian Edu, ikke vil fungere. 192.168.1.0/24 er allerede satt opp som tynnklientnett. Å endre til dette subnettet krever manuell redigering av konfigurasjonsfiler for å fjerne doble oppføringer.

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 Skrivebordsomgivelse via nett

Valg av LTSP-tjenerprofil, eller kombinert tjenerprofil installerer også `xrdp` og `x2goserver` -pakkene.

### 17.4.1 Xrdp

Xrdp 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.

I tillegg kan XRDP koble seg til en VNC-tjener, eller en annen RDP-tjener.

Xrdp comes without sound support; to compile (or re-compile) the required modules this script could be used. Please note: 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.

```
#!/bin/bash
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
sudo apt -q install dpkg-dev
cd $TMP
apt -q source pulseaudio xrdp
sudo apt -q build-dep pulseaudio xrdp
cd pulseaudio-$PULSE_UPSTREAM_VERSION/
./configure
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
sudo cp *.so /usr/lib/pulse-$PULSE_UPSTREAM_VERSION/modules/
sudo chmod 644 /usr/lib/pulse-$PULSE_UPSTREAM_VERSION/modules/module-xrdp*
sudo service xrdp restart
```

### 17.4.2 X2Go

X2Go enables you to access a graphical desktop on the LTSP server over both low bandwidth and high bandwidth connections from a PC running Linux, Windows or macOS. Additional software is needed on the client side, see the [X2Go wiki](#) for more information.

Please note that the `killer` package should best be removed on the LTSP server if X2Go is used, see [890517](#).

### 17.4.3 Tilgjengelige klienter for skrivebordsomgivelse via nett

- `freerdp-x11` er installert som standard, og håndterer RDP og VNC.
  - RDP - den enkleste måte å koble til Windows-terminaltjener. Det er bare å installere `rdesktop`-pakken.
  - VNC-klienter (Virtuell Nettverksmaskin) gir tilgang til Skolelinux utenfra. Bare installer pakken `xvncviewer`.
- `x2goclient` is a graphical client for the X2Go system (not installed by default). You can use it to connect to running sessions and start new ones.

## 17.5 Wireless clients

The *freeRADIUS* server could be used to provide secure network connections. For this to work, install the *freeradius* and *winbind* packages on the main server and run `/usr/share/debian-edu-config/tools/setup-freeradius-server` to generate a basic, site specific configuration. This way, both EAP-TTLS/PAP and PEAP-MSCHAPV2 methods are enabled. All configuration is contained in the script itself to facilitate site specific adjustments. See [the freeRADIUS homepage](#) for details.

Additional configuration is needed to

- enable/disable access points via a *shared secret* (`/etc/freeradius/3.0/clients.conf`).
- allow/deny wireless access using LDAP groups (`/etc/freeradius/3.0/users`).
- combine access points into dedicated groups (`/etc/freeradius/3.0/huntgroups`)



End user devices need to be configured properly, these devices need to be PIN protected for the use of EAP (802.1x) methods. Users should also be educated to install the freeradius CA certificate on their devices to be sure to connect to the right server. This way their password can't be caught in case of a malicious server. The site specific certificate is available on the internal network.

- <https://www.intern/freeradius-ca.pem> (for end user devices running Linux)
- <https://www.intern/freeradius-ca.crt> (Linux, Android)
- <https://www.intern/freeradius-ca.der> (macOS, iOS, iPadOS, Windows)

Please note that configuring end user devices will be a real challenge due to the variety of devices. For Windows devices an installer script could be created, for Apple devices a `mobileconfig` file. In both cases the freeRADIUS CA certificate can be integrated, but OS specific tools are needed to create the scripts.

## 17.6 Authorize Windows machine with Debian Edu credentials using pGina LDAP plugin

### 17.6.1 Adding pGina user in Debian Edu

To have an ability to use pGina (or any else 3rd party auth-service-application) you should have a special user account used in search inside of LDAP.

Add a special user, eg `pguser` with password `pwd.777`, on <https://www.gosa> website.

### 17.6.2 Install pGina fork

Download and install pGina 3.9.9.12 as usual software. Take an attention that LDAP plugin persists in pGina plugin folder:

```
C:\Program Files\pGina.fork\Plugins\pGina.Plugin.Ldap.dll
```

### 17.6.3 Configure pGina

Considering to Debian Edu settings the connection to LDAP uses SSL by port 636.

So necessary settings in a pGina LDAP plugin are below

(these are stored in HKEY\_LOCAL\_MACHINE\SOFTWARE\pGina3.fork\Plugins\0f52390b-c781-43ae-bd62-553c77fa4cf7).

#### 17.6.3.1 LDAP Plugin main section

- LDAP Host(s): **10.0.2.2** (or any else with "space" as a separator)
- LDAP Port: **636** (for SSL connection)
- Timeout: 10
- Use SSL: **YES** (tick checkbox)
- Start TLS: **NO** (don't tick checkbox)
- Validate Server Certificate: **NO** (don't tick checkbox)
- Search DN: **uid=pguser,ou=people,ou=Students,dc=skole,dc=skolelinux,dc=no**
  - ("pguser" is a user to authenticate in LDAP to search users in a login session)
- Search Password: **pwd.777** (this is the "pguser" password)

#### 17.6.3.2 Authentication block

Bind Tab:

- Allow Empty Passwords: **NO**
- Search for DN: **YES** (tick checkbox)
- Search Filter: **(&(uid=%u)(objectClass=person))**

#### 17.6.3.3 Authorization block

- Default: **Allow**
- Deny when LDAP authentication fails: **YES** (tick checkbox)
- Allow when server is unreachable: **NO** (don't tick checkbox, optional)

#### 17.6.3.4 Plugin Selection

- LDAP: Authentication [v], Authorization [v], Gateway[v], Change Password [ ]
  - Local Machine: Authentication [v], Gateway [v] (tick only two checkboxes)
-

### 17.6.3.5 Plugin Order

- Authentication: LDAP, Local Machine
- Gateway: LDAP, Local Machine

Sources:

- <http://mtonufoai.github.io/pgina/download.html>
- <http://mtonufoai.github.io/pgina/documentation/plugins/ldap.html>
- <https://serverfault.com/questions/516072/how-to-configure-pgina-ldap-plugin>

## 18 Installasjon av Debian Edu

Samba is now configured as *standalone server* with modern SMB2/SMB3 support and usershares enabled, see `/etc/samba/smb-deb` on the main server. This way non-admin users are enabled to provide shares.

For site specific changes, copy `/usr/share/debian-edu-config/smb.conf.edu-site` to the `/etc/samba` directory. The settings in *smb.conf.edu-site* will override those contained in *smb-debian-edu.conf*.

Merk deg:

- By default, home directories are read only. This can be changed in `/etc/samba/smb.conf.edu-site`.
- Samba passwords are stored using `smbpasswd` and are updated in case a password is changed using `GOsa2`.
- To temporarily disable a user's Samba account, run `smbpasswd -d <username>`, `smbpasswd -e <username>` will re-enable it.
- Running `chown root:teachers /var/lib/samba/usershares` on the main server will disable usershares for 'students'.

### 18.1 Tilgang til filer via Samba

Connections to a user's home directory and to additional site specific shares (if configured) are possible for devices running Linux, Android, macOS, iOS, iPadOS, Chrome OS or Windows. For example, Android based devices require a file manager with SMB2/SMB3 support, also known as LAN access. [X-plore](#) or [Total Commander with LAN plugin](#) might be a good choice.

Use `\\tjener\<username>` or `smb://tjener/<username>` to access the home directory.

## 19 Veiledninger for undervisning og læring

Alle Debian-pakker nevnt i denne sesjonen kan installeres ved å kjøre `apt install <package>` (som rot).

### 19.1 Programmeringsundervisning

[stable/education-development](#) er en metapakke som har avhengigheter på en rekke programmeringsverktøy. Merk at det trengs nesten 2 GiB med diskplass hvis denne pakken installeres. For flere detaljer (kanskje for å kun installere noen få av pakkene), se siden for [Debian Edu Development-pakker](#).

## 19.2 Overvåkning av elever



**Advarsel:** overvåkning av mennesker kan være uetisk og ulovlig i ditt område.

Some schools use control tools like [Epopotes](#) or [Veyon](#) to supervise their students. See also: [Epopotes Homepage](#) and [Veyon Homepage](#).

## 19.3 Begrense netttadgang for elever

Some schools use [Squidguard](#) or [e2guardian](#) to restrict Internet access.

# 20 Veiledninger for brukere

## 20.1 Endre passord

Enhver bruker bør bytte sitt passord ved å bruke GOSa<sup>2</sup>. For å gjøre dette, bruk en nettleser og besøk <https://www.gosa/>.

Using GOSa<sup>2</sup> to change the password ensures that passwords for Kerberos (krbPrincipalKey), LDAP (userPassword) and Samba are the same.

Å endre passord ved hjelp av PAM virker også i GDM login ledetekst, men dette vil bare oppdatere Kerberos passord, og ikke Samba og GOSa<sup>2</sup> (LDAP) passord. Så etter at du har byttet passord i login ledeteksten, bør du egentlig også endre den ved hjelp GOSa<sup>2</sup>.

## 20.2 Kjøre frittstående Java-programmer

Frittstående Java-applikasjoner er støttet rett ut av boksen med pakken OpenJDK Java Runtime.

## 20.3 Bruk av e-post

Alle brukere kan sende og motta e-post på det interne nettverket; sertifikater tilbys for å tillate sikring av forbindelsene med TLS. Hvis du vil tillate e-post utenfor dette, må administratoren sette opp e-posttjeneren `exim4` med passende innstillinger. En kan starte med `dpkg-reconfigure exim4-config`.

Alle brukere som ønsker å bruke Thunderbird må konfigurere den som følger. For en bruker med brukernavn `jdoe` er den interne e-postadressen: [jdoe@postoffice.intern](mailto:jdoe@postoffice.intern).

## 20.4 Thunderbird

- Start Thunderbird
  - Klikk «Skip this and use my existing email» (hopp over dette, og bruk min eksisterende e-post)
  - Skriv inn din e-postadresse
  - Skriv ikke inn passordet da Kerberos single sign-on blir brukt
  - Klikk «Continue»
  - For både IMAP og SMTP bør innstillingene være «STARTTLS» og «Kerberos / GSSAPI»; juster hvis det ikke oppdages automatisk
  - Klikk «Done»
-

## 21 Bidra

### 21.1 Contribute online

Most of the time, the [developer mailing list](#) is our main medium for communication, though we also have [#debian-edu](#) on [irc.debian.org](#) and even, sometimes, real gatherings, where we meet each other in person.

En fin måte å få med seg hva som foregår i utviklingen av Debian Edu er å melde seg på [e-postlisten for innmeldinger av bidrag](#).

### 21.2 Report bugs

Debian Edu uses the Debian [Bug Tracking System \(BTS\)](#). View existing bug reports and feature requests or create new ones. Please report all bugs against the package [debian-edu-config](#). Take a look at [How To Report Bugs](#) for more information on bug reporting in Debian Edu.

### 21.3 Dokumentasjonsforfattere og oversettere

Dette dokumentet trenger din hjelp! For det første, så er det ikke ferdig ennå: Hvis du leser det, så vil du se flere FIXME i teksten. Hvis du vet litt om emnet og hva som må forklares der, er det fint om du vil dele kunnskapen din med oss.

The source of the text is a wiki and can be edited with a simple webbrowser. Just go to <https://wiki.debian.org/DebianEdu/Documentation/Bookworm/> and you can contribute easily. Note: a user account is needed to edit the pages; you may need to [create a wiki user account](#) first.

En annen god måte å bidra på er å hjelpe brukere ved å oversette programvare og dokumentasjon. Informasjon om hvordan oversette dette dokumentet kan du finne i [oversettelsekapittelet](#) av denne boken. Vurder å hjelpe til med oversettingen av denne boken!

## 22 Støtte

### 22.1 Frivillighetsbasert støtte

#### 22.1.1 På engelsk

- <https://lists.debian.org/debian-edu> - e-postliste for brukerstøtte
- [#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 På norsk

- [#skolelinux](#) på [irc.oftc.net](#) - IRC-kanal for support av norske brukere

#### 22.1.3 På tysk

- <https://lists.debian.org/debian-edu-german> - support mailing list
- [#skolelinux.de](#) på [irc.oftc.net](#) - IRC-kanal for support av tyske brukere

#### 22.1.4 På fransk

- <https://lists.debian.org/debian-edu-french> - support mailing list
-

## 22.2 Profesjonell support

Lists of companies providing professional support are available from <https://wiki.debian.org/DebianEdu/Help/Professional>

# 23 New features in Debian Edu Bookworm

## 23.1 New features for Debian Edu 12 Bookworm

### 23.1.1 Installasjonsendringer

- New version of Debian Installer from Debian bookworm, see its [installation manual](#) for more details,
  - including information on non-free-firmware, which is a new section in addition to the well known main, contrib and non-free sections.
- New artwork based on the [Emerald theme](#), the default artwork for Debian 12 bookworm.

### 23.1.2 Programvareoppdateringer

- Everything which is new in Debian 12 bookworm, eg:
  - Linux kernel 6.1
  - Desktop environments KDE Plasma 5.27, GNOME 43, Xfce 4.18, LXDE 11, MATE 1.26
  - LibreOffice 7.4
  - GOSa<sup>2</sup> 2.8
  - Educational toolbox GCompris 3.1
  - Music creator Rosegarden 22.12
  - LTSP 23.01
  - Debian Bookworm includes more than 64000 packages available for installation.
  - More information about Debian 12 Bookworm is provided in the [release notes](#) and the [installation manual](#).

### 23.1.3 Dokumentasjons- og oversettelsesoppdateringer

- During installation the profile choice page is available in 29 languages, of which 22 are fully translated.
- The [Debian Edu Bookworm Manual](#) is translated to Simplified Chinese, Danish, Dutch, French, German, Italian, Japanese, Norwegian (Bokmål), Brazilian Portuguese, European Portuguese and Spanish.

### 23.1.4 Kjente problemer

- see [the Debian Edu Bookworm status page](#).
-

## 24 Åndsverksrettigheter og forfattere

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## 25 Oversettelser av dette dokumentet

There is an [online overview of packaged translations](#), updated frequently.

### 25.1 Hvordan oversette dette dokumentet

#### 25.1.1 Oversett ved bruk av PO-filer

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-bookworm-manual-translations`.

#### 25.1.2 Oversett i en nettleser

Most language teams have decided to translate via Weblate. See <https://hosted.weblate.org/projects/debian-edu-document/bookworm-manual/> for more information.

Vær så snill å gi tilbakemelding om eventuelle problemer.

## 26 Vedlegg A - GNU Generell Offentlig Lisens

### 26.1 Manual for Debian Edu 12 Codename Bookworm

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## **27 Appendix B - Features in older releases**

### **27.1 New features for Debian Edu 11 Codename Bullseye released 2021-08-14**

#### **27.1.1 Installasjonsendringer**

- New version of Debian Installer from Debian bullseye, see its [installation manual](#) for more details.
- New artwork based on the [Homeworld theme](#), the default artwork for Debian 11 (bullseye).
- The Debian Installer doesn't support LTSP chroot setup anymore. In case of a combined server installation ('Main server' + 'LTSP server' profiles), setting up thin client support (now using X2Go) happens at the end of the installation. Generating the SquashFS image for diskless client support (from the server's file system) is done at first boot.

For separate LTSP servers, both steps have to be done via a tool after first boot inside the internal network when enough information is available from the main server.

#### **27.1.2 Programvareoppdateringer**

- Everything which is new in Debian 11 Bullseye, eg:
  - Linux kernel 5.10
  - Desktop environments KDE Plasma 5.20, GNOME 3.38, Xfce 4.16, LXDE 11, MATE 1.24
  - LibreOffice 7.0
  - Educational toolbox GCompris 1.0
  - Music creator Rosegarden 20.12
  - LTSP 21.01
  - Debian Bullseye includes more than 59000 packages available for installation.
  - More information about Debian 11 bullseye is provided in the [release notes](#) and the [installation manual](#).

### 27.1.3 Dokumentasjons- og oversettelsesoppdateringer

- During installation the profile choice page is available in 29 languages, of which 22 are fully translated.
- The [Debian Edu Bullseye Manual](#) is fully translated to Dutch, French, German, Italian, Japanese, Norwegian Bokmål, Portuguese (Portugal) and Simplified Chinese.
  - Partly translated versions exist for Danish and Spanish.

### 27.1.4 Andre endringer sammenlignet med den forrige utgivelsen

- Improved TLS/SSL support on the internal network. On clients, the root certificate for the Debian Edu-CA is located inside the certificate bundle for the whole system.
- Ny LTSP, omskrevet fra bunnen av, noe som dropper tynnklientstøtte. Tynnklienter støttes nå ved bruk av X2Go.
- Netboot is provided using iPXE instead of PXELINUX to be compliant with LTSP.
- The `/srv/tftp` directory is now used as netboot base instead of `/var/lib/tftpboot`.
- After a point release upgrade of a system with *Main Server* or *LTSP Server* profile, `debian-edu-pxeinstall` needs to be run to update the PXE installation environment.
- DuckDuckGo is used as default search provider for both Firefox ESR and Chromium.
- Chromium uses the internal website instead of Google as default startpage.
- On diskless workstations, the Kerberos TGT is available after login automatically.
- New tool added to set up freeRADIUS with support for both EAP-TTLS/PAP and PEAP-MSCHAPV2 methods.
- Samba is configured as 'standalone server' with support for SMB2/SMB3; domain joining is gone.
- The GOsa<sup>2</sup> web interface doesn't show Samba related entries because Samba account data are no longer stored in LDAP.
- Debian Installer's graphical mode is used for PXE installations (instead of text mode).
- Central CUPS print server `ipp.intern`, users belonging to the `printer-admins` group are allowed to administrate CUPS.
- Icinga administration via the web interface is restricted to the first user.

## 27.2 Mer informasjon om eldre utgivelser

Følgende tidligere Debian Edu-utgivelser ble utviklet ytterligere:

- Debian Edu 10+edu0 Codename Buster released 2019-07-06.
  - Debian Edu 9+edu0 Codename Stretch released 2017-06-17.
  - Nye egenskaper i Debian Edu 8+edu0 kodenavn «Jessie» utgitt 2016-07-02
  - Nye egenskaper i Debian Edu 7.1+edu0 Kodenavn Wheezy utgitt 2013-09-28.
  - Debian Edu 6.0.7+r1 kodenavn "Squeeze", gitt ut 2013-03-03.
  - Debian Edu 6.0.4+r0 Codename "Squeeze", utgitt 2012-03-11.
  - Debian Edu 5.0.6+edu1 Codename "Lenny", utgitt 2010-10-05.
  - Debian Edu 5.0.4+edu0 Codename "Lenny", utgitt 2010-02-08.
  - Debian Edu "3.0r1 Terra", utgitt 2007-12-05.
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- Debian Edu "3.0r0 Terra" utgitt 2007-07-22. Basert på Debian 4.0 Etch utgitt 2007-04-08.
- Debian Edu 2.0, utgitt 2006-03-14. Basert på Debian 3.1 Sarge utgitt 2005-06-06.
- Debian Edu «1.0 Venus» utgave 2004-06-20. Basert på Debian 3.0 Woody, gitt ut 2002-07-19.

En komplett og detaljert oversikt om eldre utgivelser finnes i [Appendix C of the Jessie manual](#); Eller se de relaterte håndbokutgivelser på [release manuals page](#).