Manual for Debian Edu / Skolelinux 12 Bookworm

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1 Manual for Debian Edu 12 kodenavn bookworm

Oversættelse:
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Dette er manualen for Debian Edu 12 (bookworm) udgivelsen.

Versionen på https://wiki.debian.org/DebianEdu/Documentation/Bookworm er en wiki og opdateres ofte.

Opdateret oversættelser er tilgængelige online.

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 GOsa², 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 Lidt historik og hvorfor projektet har to navne

Debian Edu / Skolelinux er en Linuxdistribution oprettet af projektet Debian Edu. Som en Debian Pure Blends-distribution er det et officielt underprojekt af Debian.

For din skole betyder dette, at Skolelinux er en version af Debian, som tilbyder et ud af boksen-miljø for et fuldstændig konfigureret skolenetværk.

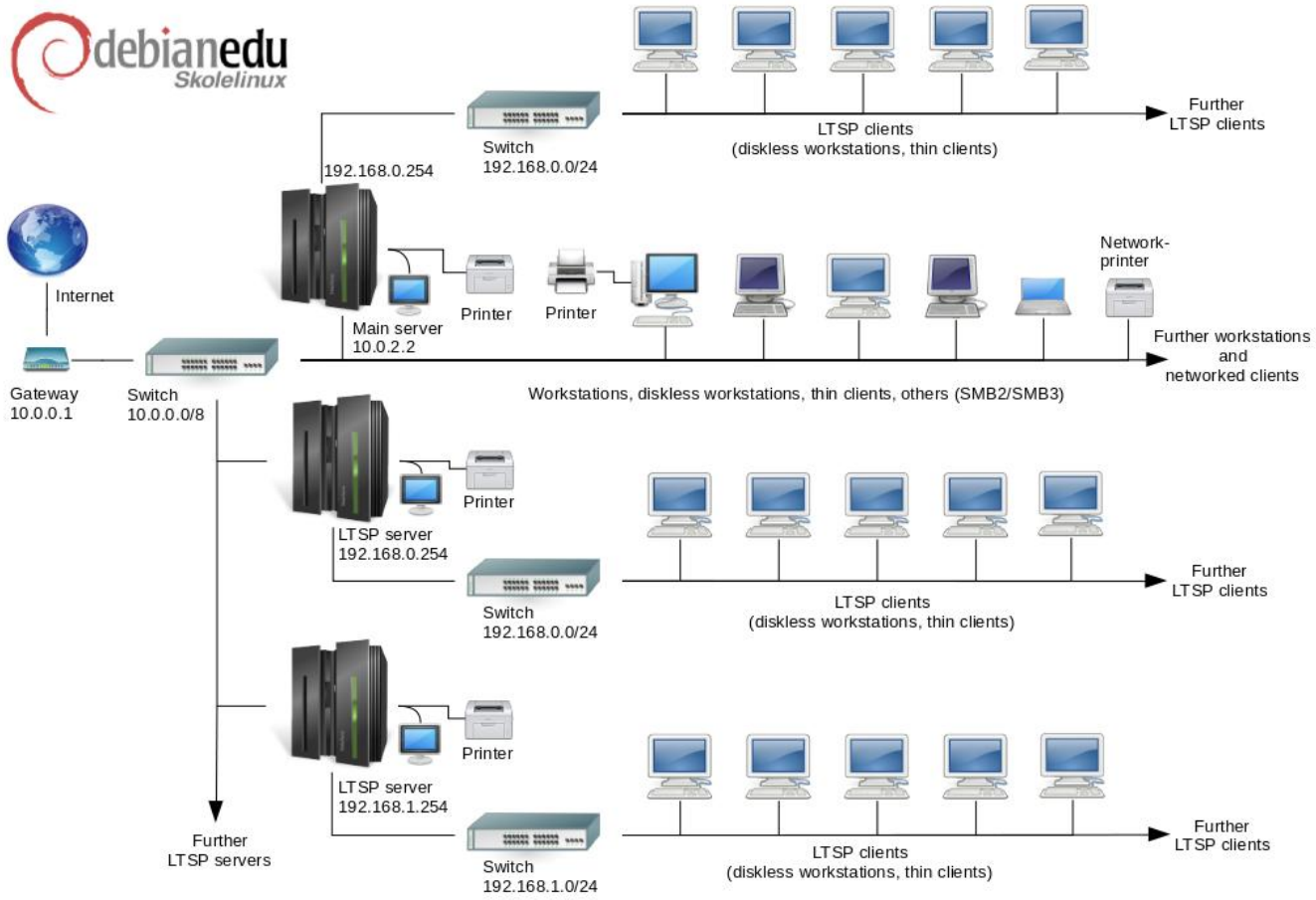
Projektet Skolelinux blev grundlagt i Norge den 2. juli 2001 og omkring samme tidspunkt startede Raphaël Hertzog Debian-Edu i Frankrig. Siden 2003 er projekterne forenet, men bevarede begge navne. »Skole« og (Debian-)»Education« er velintegrerede termer i begge regioner.

I dag bruges systemet i flere lande.

3 Arkitektur

3.1 Netværk

Dette afsnit af dokumentationen beskriver netværksarkitekturen og tjenesterne tilbudt af en Skolelinuxdistribution.



Figuren er en tegning af den forventede netværkstopologi. Standardopsætningen for et Skolelinuxnetværk antager, at der er en (og kun en) hovedserver, som tillader inkludering af både normale arbejdsstationer og servere for tynde klienter (med associerede tynde klienter og/eller diskløse arbejdsstationer). Antallet af arbejdsstationer kan være så stort eller småt som du ønsker (startende fra ingen til en helt masse). Det samme gælder for LTSP-serverne, som hver for sig er på et adskilt netværk, så at trafikken mellem klienterne og LTSP-serven ikke påvirker resten af netværkstjenesterne. LTSP er forklaret i detaljer i afsnittet den forbundne hjælp.

Årsagen til, at der kun kan være en hovedserver i hvert skolenetværk er at hovedserveren tilbyder DHCP, og der kan kun være en maskine til dette i hvert netværk. Det er muligt at flytte tjenester fra hovedserveren til andre maskiner ved at opsætte tjenesten på en anden maskine, og efterfølgende opdatere DNS-konfigurationen, pegende DNS-aliasset for den tjeneste til den korrekte computer.

For at forenkel opsætningen af Skolelinux, så afvikles internetforbindelsen over en separat ruter, også kaldt adgangspunkt. se kapitlet Internetruter for detaljer om opsætning af sådant et adgangspunkt, hvis det ikke er muligt at konfigurere en eksisterende som krævet.

3.1.1 Netværkets standardopsætning

DHCPD på hovedserveren betjener 10.0.0.0/8-netværket, der tilbyder en PXE-opstartsmenu, hvor du kan vælge hvorvidt der skal installeres en ny server/arbejdsstation, startes en tynd klient eller diskløs arbejdsstation op, køres hukommelsestest (memtest), eller startes op fra den lokale harddisk.

Dette er designet til at kunne ændres; for detaljer, se det relevante vejledningskapitel.

DHCPD på LTSP-serverne betjener kun et dedikeret netværk på den 2. grænseflade (192.168.0.0/24 og 192.168.1.0/24 er prækonfigurerede indstillinger) og der vil sjældent være behov for at ændre dette.

Konfigurationen af alle undernet gemmes i LDAP.

3.1.2 Hovedserver

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

3.1.3 Tjenester der kører på hovedserveren

Med undtagelse af kontrollen af tynde klienter, så opsættes alle tjenester oprindeligt på en central computer (hovedserveren). Af ydelsesårsager skal LTSP-serverne være separate maskiner (det er dog muligt at installere profilerne for både hovedserveren og LTSP-serveren på den samme maskine). Alle tjenester allokerer et dedikeret DNS-navn og tilbydes eksklusivt over IPv4. Det allokerede DNS-navn gør det nemt at flytte individuelle tjenester fra hovedserveren til en anden maskine, ved at stoppe tjenesten på hovedserveren, ændre DNS-konfigurationen til at pege på den nye placering for tjenesten (som selvfølgelig først skal opsættes på den maskine).

For at øge sikkerheden er alle forbindelser hvor adgangskoder transmitteres over netværket krypteret, så at ingen adgangskoder sendes over netværket som klartekst.

Nedenfor er en tabel over tjenesterne, der som standard er opsat i et netværk for Skolelinux og DNS-navnet for hver tjeneste. Hvis muligt vil alle konfigurationsfiler referere til tjenesten ved navn (uden domænenavnet) hvilket gør det nemt for skoler at ændre enten deres domæne (hvis de har et eget DNS-domæne) eller IP-adresserne de bruger.

Tjenestetabel		
Tjenestebeskrivelse	**Almindeligt navn**	**DNS-tjenestenavn**
Centraliseret logning	rsyslog	syslog
Tjeneste for domænenavn	DNS (BIND)	domæne
Automatisk netværkskonfiguration af maskiner	DHCP	bootps
Ursynkronisering	NTP	ntp
Hjemmemapper via netværksfilsystem	SMB / NFS	hjem
Elektronisk postkontor	IMAP (Dovecot)	postkontor
Mappetjeneste	OpenLDAP	ldap
Brugeradministration	GOsa[2]	---
Internetserver	Apache/PHP	www
Central sikkerhedskopiering	sl-backup, slbackup-php	sikkerhedskopiering
Internetmellemlager	Proxy (Squid)	internetmellemlager
Udskrivning	CUPS	ipp
Sikker ekstern logind	OpenSSH	ssh
Automatisk konfiguration	CFEngine	cfengine
LTSP-servere	LTSP	ltsp
Maskine og tjenesteovervågelse med fejlrapportering, plus status og historik på internettet. Fejlrapportering via e-post	Munin, Icinga og sideoversigt	siteoversigt

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 sættes posten kun op for lokal levering (dvs. indenfor skolen), dog kan e-postlevering til det større internet sættes op, hvis skolen har en permanent internetforbindelse. Klienter opsættes til at levere post til serveren (med brug af »smarthost«), og brugere kan tilgå deres personlige post via IMAP.

Alle tjenester kan tilgås med brug af det samme brugernavn og adgangskode, takket være den centrale brugerdatabase for godkendelse og autorisation.

For at øge ydelsen på ofte tilgåede sider så bruges en internetproxy til at mellemlagre filer lokalt (Squid). Sammen med blokering af internettrafik i routeren giver dette også kontrol over internetadgang på individuelle maskiner.

Netværkskonfiguration på klienterne udføres automatisk med brug af DHCP. Alle klienttyper kan forbindes til det private undernet 10.0.0.0/8, og vil få tilsvarende IP-adresser; LTSP-klienter skal forbinde til den tilsvarende LTSP-server via det separate undernet 192.168.0.0/24 (dette for at sikre at netværkstrafik fra LTPS-klienterne ikke påvirker resten af netværkstjenesterne).

Centraliseret logning sættes op så at alle maskiner sender deres syslog-beskeder til serveren. Syslog-tjenesten sættes op så at den kun accepterer indgående beskeder fra det lokale netværk.

Som standard sættes DNS-serveren op med et domæne kun for intern brug (*.intern), indtil et reelt (»external«) DNS-domæne kan sættes op. DNS-serveren sættes op som Caching DNS-server, så at alle maskiner på netværket kan bruge den som DNS-hovedserver.

Studerende og lærere har mulighed for at udgive internetsider. Internetserveren tilbyder mekanismer for godkendelse af brugere, og begrænsning af adgang til individuelle sider og undermapper for bestemte brugere og grupper. Brugere vil have mulighed for at oprette dynamiske internetsider, da internetserveren vil være programmerbar på serversiden.

Information om brugere og maskiner kan ændres på en central placering, og gøres tilgængelig for alle computere på netværket automatisk. For at opnå dette sættes en centraliseret mappeserver op. Mappen vil have information om brugere, brugergrupper, maskiner og grupper af maskiner. For at undgå brugerforvirring vil der ikke være nogen forskel mellem filgrupper, postlister og netværksgrupper. Dette medfører at grupper af maskiner, som skal udgøre netværksgrupper vil bruge det samme navnerum som brgergrupper.

Administration af tjenester og brugere vil hovedsagelig foregå via internettet, og følge etablerede standarder, der fungerer godt i internetbrowsere som er en del af Skolelinux. Delegeringen af bestemte opgaver til individuelle brugere eller brugergruppper kan gøres muligt via administrationssystemerne.

For at undgå bestemte problemer med NFS, og gøre det nemmere at fejlsøge, skal de forskellige maskiner have synkroniserede ure. For at få dette sættes serveren for Skolelinux op som en lokal Network Time Protocol-server (NTP). Selve serveren skal synkronisere sit ur via NTP mod maskiner på internettet, og dermed sikre at hele netværket har den korrekt tidsangivelse.

Printere forbindes hvor det er passende, enten direkte til hovednetværket, eller forbundet til en server, arbejdsstation eller LTSP-server. Adgang til printere kan kontrolleres for individuelle brugere jævnfør den gruppe de tilhører; dette vil blive opnået ved at bruge kvoter og adgangskontrol for printere.

3.1.4 LTSP-servere

Et netværk for Skolelinux kan have mange LTSP-servere, som installeres ved at vælge LTSP-serverprofilen.

LTSP-serverne sættes op til at modtage syslog fra de tynde klienter og arbejdsstationer, og videresender disse beskeder til den centrale syslog-modtager.

Bemærk venligst:

- 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 Tynde klienter

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 Diskløse arbejdsstationer

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 Netværksklienter

Termen »netværksklienter« bruges i denne manual til at referere til både tynde klienter og diskløse arbejdsstationer, samt computere der kører macOS eller Windows.

3.2 Administration

Alle Linuxmaskinerne, som er installeret via Skolelinux-installationsprogrammet, vil kunne administreres fra en central computer, højst sandsynlig serveren. Det vil være muligt at logge ind på alle maskiner via SSH, og dermed have fuld adgang til maskinerne. Som administrator skal man afvikle `kinit` først for at få en Kerberos TGT.

Al brugerinformation opbevares i en LDAP-mappe. Opdateringer af brugerkontoer udføres mod denne database, som bruges af klienter for brugergodkendelse.

3.2.1 Installation

Aktuelt er der to typer af installationsmedier: netinst og BD. Begge aftryk kan også indlæses fra USB-drev.

Formålet er at være i stand til at installere en server fra ethvert medie og installere alle andre klienter over netværket ved at starte op fra netværket.

Kun netinstall-aftrykket kræver adgang til internettet under installation.

The installation should not ask any questions, with the exception of desired language, location, keyboard layout and machine profile (Main Server, Workstation, LTSP Server, ...). All other configuration will be set up automatically with reasonable values, to be changed from a central location by the system administrator subsequent to the installation.

3.2.2 Adgangskonfiguration for filsystem

Hver brugerkonto i Skolelinux tildeles et afsnit af filsystemet på filserveren. Dette afsnit (hjemmemappen) indeholder brugerens konfigurationsfiler, dokumenter, e-post og internetsider. Nogle af filerne bør gives læseadgang for andre brugere på systemet, nogle skal kunne læses af alle på internettet, og nogle skal ikke kunne tilgås for læsning af andre end brugeren selv.

For at sikre at alle diske som bruges for hjemmemapper eller delte mapper er unikt navngivet på tværs af alle computere i installationen, kan de monteres som `/skole/host/directory/`. Som start oprettes en mappe på filserveren, `/skole/tjener/home0/`, hvor alle brugerkontoerne oprettes. Yderligere mapper kan så oprettes, når der skal tilpasses til specifikke brugergruppper eller specifikke forbrugsmønstre.

For at aktivere adgang til filer under det normale UNIX-rettighedssystem, så skal brugere være i supplementært delte grupper (såsom »studenter«) samt den personlige primære gruppe de er i som standard. Hvis brugere har en passende umask til at gøre nyoprettede punkter adgangsbare for grupper (002 eller 007), og hvis mapperne de arbejder i er setgid for at sikre at filerne arver det korrekte gruppeejerskab, er resultatet kontrolleret fildeling mellem medlemmer af en gruppe.

Den oprindelige adgangsindstilling for netop oprettede filer er et politikspørgsmål. Den normale umask for Debian er 022 (som ikke tillader gruppeadgang som beskrevet ovenfor), men Debian Edu bruger en standard på 002 - hvilket betyder at filer oprettes med læseadgang for alle, hvilket senere kan fjernes med en eksplicit brugerhandling. Dette kan ændres (ved at redigere `/etc/pam.d/common-session`) til en umask på 007 - hvilket betyder at læseadgang er blokeret, og at en brugerhandling skal udføres for at gøre dem tilgængelige. Den første metode opmuntrer til vidensdeling, og gør systemet

mere gennemsigtigt, hvor den anden metode formindsker risikoen for uønsket spredning af ømtålelig information. Problemet med den første løsning er at det ikke er indlysende for brugerne, at materialet de opretter vil være tilgængeligt for alle andre brugere. De kan kun se dette ved at kigge i andre brugeres mapper og der se at deres filer også er læsbare. Problemet med den anden løsning er at få personer vil gøre deres filer læsbare også selv om de ikke indeholder ømtålelig information og at indholdet ville have været nyttig for andre brugere, som ønsker at lære hvordan andre har løst specifikke problemer typisk konfigurationsproblemer).

4 Krav

Der er forskellige måder at opsætte en løsning med Skolelinux. Den kan installeres på en enkelt uafhængig pc, eller som en regionudbredt løsning på mange skoler der håndteres centralt. Denne fleksibilitet gør en stor forskel for konfigurationen af netværkskomponenter, servere og klientmaskiner.

4.1 Krav til udstyret

Formålet med forskellige profiler er forklaret i kapitlet netværksarkitektur.

 Hvis LTSP skal bruges, så tag et kig på wikisiden med LTSP-udstyrskrav.

- Computerne der afvikler Debian Edu/Skolelinux skal have enten 32-bit (Debianstruktur »i386«, ældste understøttede processorer er 686) eller 64-bit (Debianarkitektur »amd64«) x86-processorer.
- Tynde klienter kan køre på så lidt som 256 MiB RAM og 400 MHz, dog anbefales mere RAM og hurtigere processorer.
- For workstations, diskless workstations and standalone systems, a SSE2 capable processor (Intel Pentium 4 or higher, AMD Athlon 64 or higher), 1500 MHz and 1024 MiB RAM are the absolute minimum requirements. For running modern webbrowsers and LibreOffice at least 2048 MiB RAM is recommended.
- Kravet for minimal diskplads afhænger af profilen som installeres:
  - 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
  - arbejdsstation eller uafhængig: 30 GiB.
  - minimal netværksmaskininstallation: 4 GiB.
- LTSP-servere skal have to netværkskort når netværkets standardarkitektur bruges:
  - eth0 er forbundet til hovednetværket (10.0.0.0/8),
  - eth1 bruges for LTSP-klienter.
- Bærbare har de samme krav som arbejdsstationer da de bare er flytbare arbejdsstationer.

4.2 Udstyr som vides at fungere

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 er en indsats for at dokumentere, hvordan du skal installere, konfigurere og bruge Debian på specifikt udstyr, hvilket giver potentielle købere viden omkring om udstyret er understøttet og eksisterende ejere kan få det bedste ud af deres udstyr.

5 Krav for netværksopsætning

5.1 Standardopsætning

Når der bruges standardarkitekturen for netværket, så gælder disse regler:

- You need exactly one main server.
- Du kan have hundredvis af arbejdsstationer på hovednetværket.
- Du kan have en masse LTSP-servere på hovednetværket; to forskellige undernet er prækonfigurerede i LDAP (DNS, DHCP) i LDAP, flere kan tilføjes.
- Du kan have hundredvis af tynde klienter og/eller diskløse arbejdsstationer på hvert LTSP-servernetværk.
- Du kan have hundredvis af andre maskiner, som vil have dynamiske IP-adresser tildelt.
- For adgang til internettet skal du bruge en router/gateway (se nedenfor).

5.2 Internetrouter

En router/gateway forbundet med internettet på den eksterne grænseflade og kørende på IP-adressen 10.0.0.1 med netmaske 255.0.0.0 på den interne grænseflade, er krævet for at forbinde til internettet.

Routeren skal ikke køre en DHCP-server, den kan køre en DNS-server, dog er dette ikke krævet og vil ikke blive brugt.

In case you do not already have a router or your existing router cannot be set up accordingly, any machine which fulfills the requirements for a minimal Debian installation and which has at least two network interfaces can be turned into a gateway between the existing network and the Debian Edu one. See installation documentation for a simple way to install and set up a Debian machine using `debian-edu-router-config`.

Hvis du skal bruge noget for en indlejret router eller adgangspunkt så anbefaler vi brugen af OpenWRT. Du kan selvfølgelig også bruge den oprindelige firmware. Brug af den oprindelige firmware er nemmere; brugen af OpenWRT giver dig flere valgmuligheder og kontrol. Kontroller OpenWRT's internetsider for en liste over understøttet udstyr.

Det er muligt at bruge en anden netværksopsætning (der er en dokumenteret procedure for dette), men hvis du ikke er tvunget til at gøre dette på grund af en eksisterende netværksinfrastruktur, så anbefaler vi ikke dette, men at du bevarer den standardmæssige netværksarkitektur.

6 Indstillinger for installation og hentning

6.1 Hvor finder jeg yderligere information

We recommend that you read or at least take a look at the release notes for Debian Bookworm before you start installing a system for production use. There is more information about the Debian Bookworm release available in its installation manual.

Giv Debian Edu/Skolelinux et forsøg, et bør bare virke.

Det anbefales at læse kapitlerne om udstyrs- og netværkskrav og det om arkitektur før installation på en hovedserver.

Husk at læse kapitlet kom i gang i denne manual, da kapitlet forklarer hvordan du logger ind den første gang.

6.2 Download the installation media for Debian Edu 12 Codename bookworm

6.2.1 amd64 eller i386

`amd64` and `i386` are the names of two Debian architectures for x86 CPUs, both are or have been build by AMD, Intel and other manufacturers. `amd64` is a 64-bit architecture and `i386` is a 32-bit architecture. New installations today should be done using `amd64`. `i386` should only be used for very old hardware.

6.2.2 netinst ISO-aftryk for amd64 eller i386

The netinst iso image can be used for installation from CD/DVD and USB flash drives and is available for two Debian architectures: amd64 or i386. As the name implies, Internet access is required for the installation.

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

- https://cdimage.debian.org/cdimage/archive/12.15.0/amd64/iso-cd/
- https://cdimage.debian.org/cdimage/archive/12.15.0/i386/iso-cd/

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://cdimage.debian.org/cdimage/archive/12.15.0/amd64/iso-bd/
- https://cdimage.debian.org/cdimage/archive/12.15.0/i386/iso-bd/

6.2.4 Verification of downloaded image files

Detailed instructions for verifying and using these images are part of the Debian-CD FAQ.

6.2.5 Kilder

Sources are available from the Debian archive at the usual locations, several media are linked on https://get.debian.org/cdimage/release/current/source/

6.3 Installation af 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 Installationsscenarier for hovedserveren

A. Typisk skole- eller hjemmenetværk med internetadgang via en ruter, der tilbyder DHCP:
   - Installation af en hovedserver er muligt, men efter genstart vil der ikke være internetadgang (på grund af den primære netværksgrænseflade-IP 10.0.2.2/8).
   - Se kapitlet Internetruter for detaljer om hvordan et adgangspunkt opsættes, hvis det ikke er muligt at konfigurere et eksisterende et som krævet.
   - Forbind alle komponenter som vist i kapitlet arkitektur.
   - The main server should have Internet connection once booted the first time in the correct environment.

B. Typisk skole- eller institutionsnetværk, svarende til den overfor, men med krævet proxybrug.
   - Tilføj »debian-edu-expert« til kernekommandolinjen; se mere nedenfor for detaljer om hvordan dette gøres.
   - Nogle yderligere spørgsmål skal besvares, de proxyserverrelaterede inkluderet.

C. Netværk med ruter/adgangspunkt IP 10.0.0.1/8 (som ikke tilbyder en DHCP-server) og internetadgang:

- Så snart den automatiske netværkskonfiguration fejler (på grund af manglende DHCP), så vælg manuel netværkskonfiguration.
  - Indtast 10.0.2.2/8 som værts-IP
  - Indtast 10.0.0.1 som adgangspunkt-IP
  - Indtast 8.8.8.9 som navneserver-IP med mindre du ved bedre
- Hovedserveren bør fungere efter den første opstart.

D. Frakoblet (ingen internetforbindelse):

- Brug BD ISO-aftrykket.
- Sikr dig at alle (reelle/virtuelle) netværkskabler er koblet fra.
- Vælg »Konfigurer ikke netværket på dette tidspunkt« (efter DHCP fejlede i at konfigurere netværket og du trykkede på »Fortsæt«).
- Opdater systemet når startet op første gang i det korrekte miljø med internetadgang.

6.3.2 Desktop environments

Several desktop environments are available:

- Xfce har et lidt større ressourceforbrug end LXDE men en rigtig god sprogunderstøttelse (106 sprog).
- KDE og GNOME har begget god sprogunderstøttelse, men et for stort ressourceforbrug for både ældre computere og for 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 det laveste ressourceforbrug og understøtter 35 sprog.
- LXQt is a lightweight desktop environment (language support similar to LXDE) with a more modern look and feel (based on Qt just like KDE).

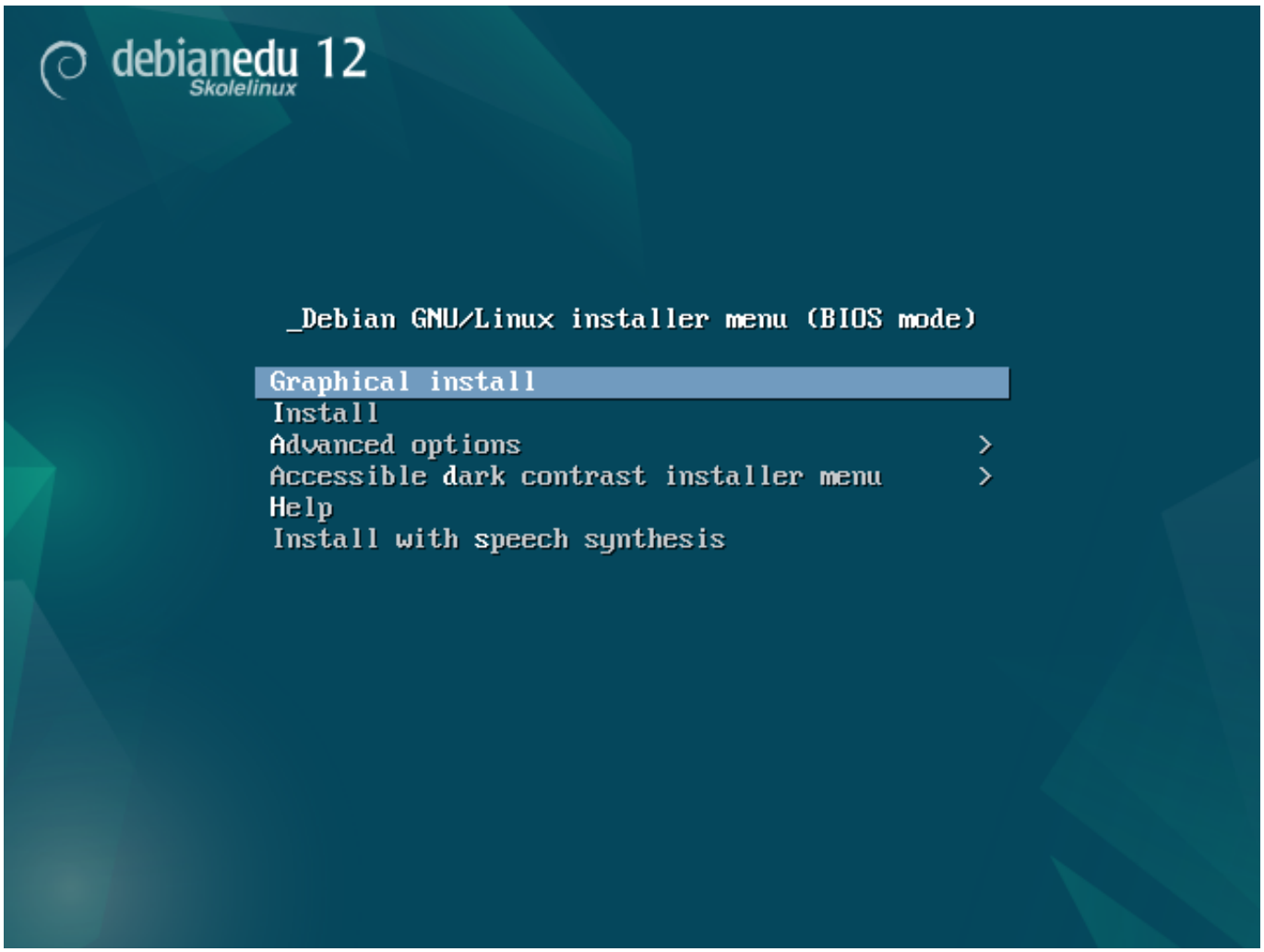
Debian Edu som et internationalt projekt har valgt at bruge Xfce som standardskrivebordet; se nedenfor for at vælge et andet.

6.3.3 Modulopbygget installation

- Når et system installeres med profilen *Arbejdsstation* inkluderet, så installeres en masse undervisningsrelaterede programmer. For kun at installere den grundlæggende profil, fjern kernekommandolinjeparameteren *desktop=xxxx* før start af installationen; se yderligere nedenfor for detaljer om hvordan dette gøres. Dette tillader en at installere et sidespecifikt system og kan bruges til at øge hastigheden for testinstallationer.
- 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-primaryschool*, *education-secondaryschool*, *education-highschool* could be installed to match the use case.
- For detaljer om Debian Edu-metapakker, se siden Debian Edu-pakkeoverblik.

6.3.4 Installationstyper og indstillinger

Installer boot menu on 64-bit Hardware - BIOS mode

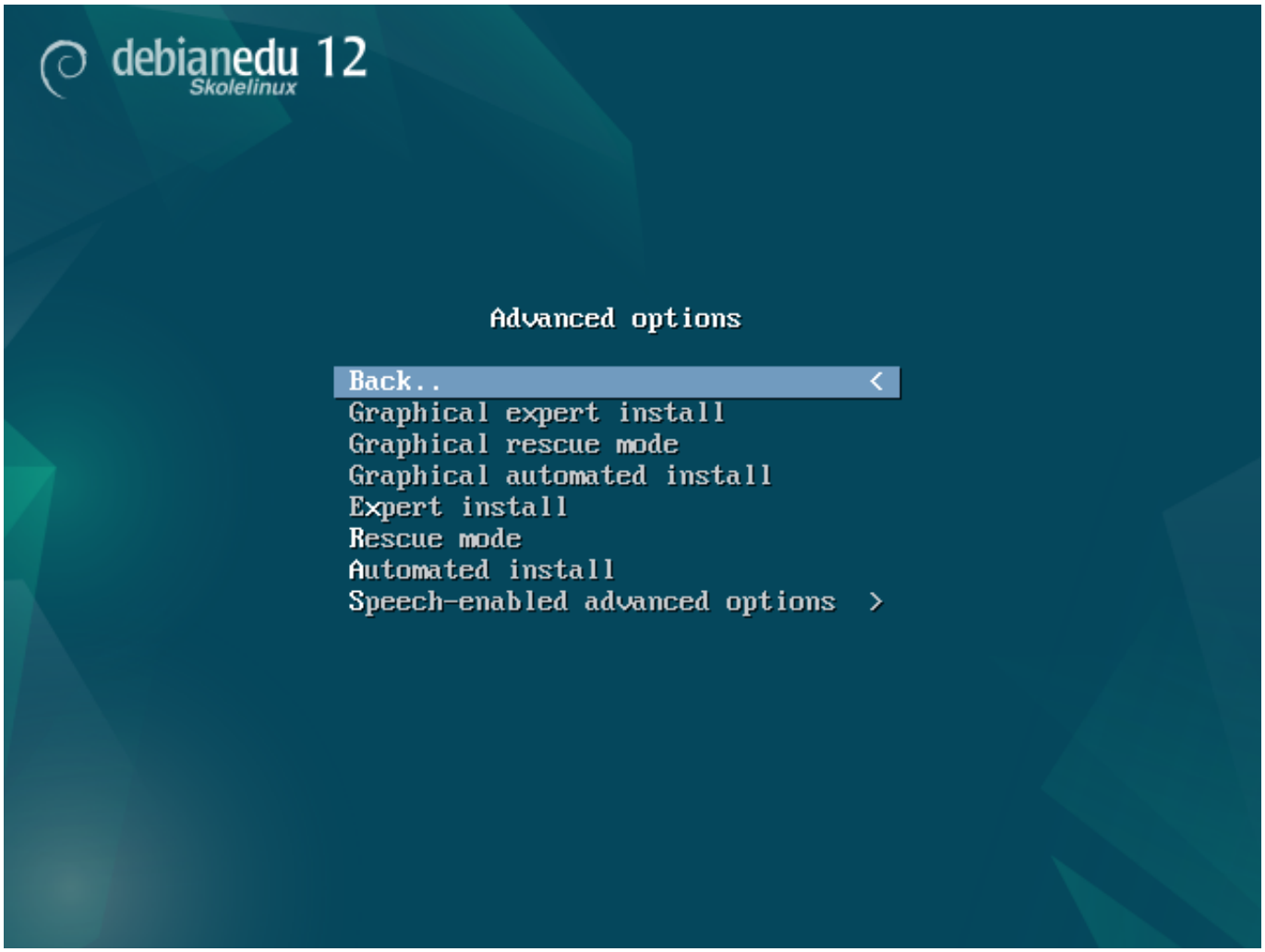


Grafisk installation bruger GTK-installationsprogrammet, hvor du kan bruge musen.

Installationen bruger teksttilstand.

Avancerede indstillinger > har en undermenu med flere detaljerede indstillinger at vælge fra.

Hjælp har nogle fif til brugen af installationsprogrammet; se skærmbillede nedenfor.



Tilbage ... gå til hovedmenuen.

Grafisk ekspertinstallation giver adgang til alle tilgængelige spørgsmål; musen kan anvendes.

Grafisk redningstilstand omdanner dette installationsmedie til en redningsdisk i tilfælde af nedbrud.

Grafisk automatisk installation kræver en forudfyldt fil (preseed).

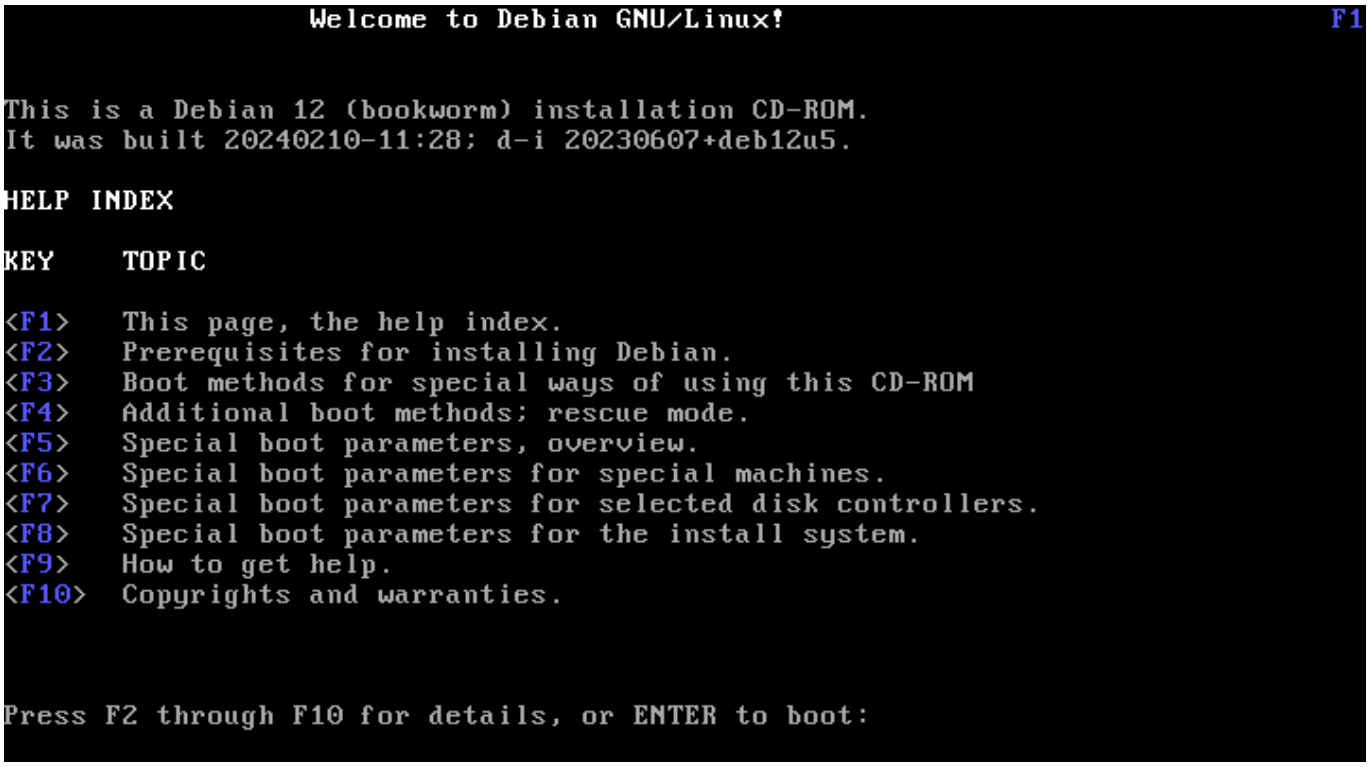
Ekspertinstallation giver adgang til alle tilgængelige spørgsmål i teksttilstand.

Redningstilstand i teksttilstand; dette gør installationsmediet til en redningsdisk i tilfælde af nedbrud.

Automatisk installation i teksttilstand; kræver en forhåndskonfigurationsfil (preseed).

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

Hjælpeskærm



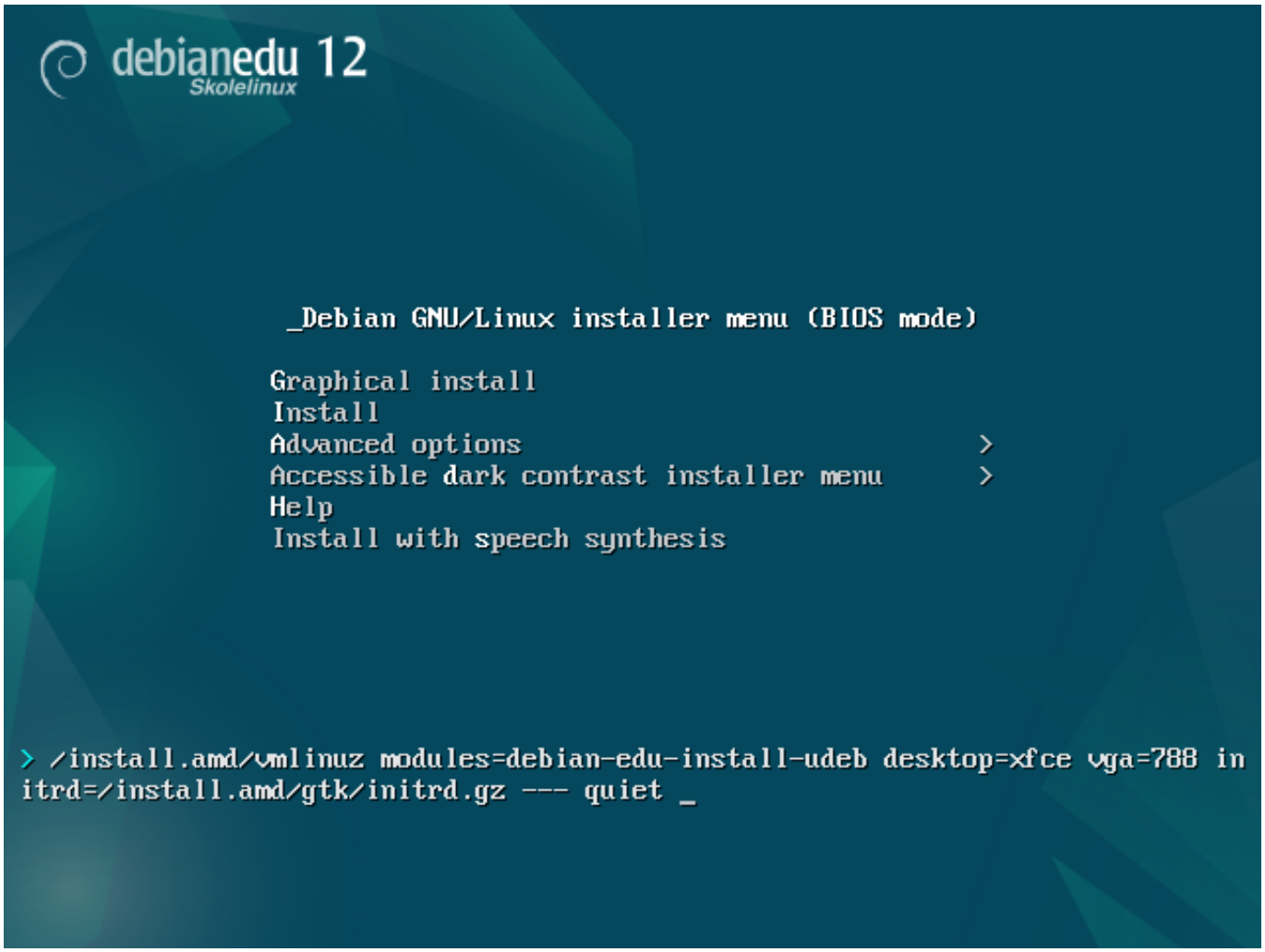
Hjælpeskærmen er selvforklarende og aktiverer <F>-tasterne på tastaturet for yderligere hjælp om de beskrevne emner.

Installer boot menu on 64-bit Hardware - UEFI mode



Tilføj eller ændr opstartsparametre for installation

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**.


debianedu 12
Skolelinux
_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.
- For at installere **LXDE**-skrivebordet i stedet, så brug `desktop=lxde`.
- For at installere **LXQt**-skrivebordet i stedet, så brug`desktop=lxqt`.
- For at installere **KDE Plasma**-skrivebordet i stedet, så brug `desktop=kde`.
- For at installere **Cinnamon**-skrivebordet i stedet, så brug `desktop=cinnamon`.
- For at installere **MATE**-skrivebordet i stedet, så brug `desktop=mate`.

6.3.5 Installationsprocessen

Husk system requirements og sikr dig at du har mindst to netværkskort (NIC'er) hvis du planlægger at opsætte en LTSP-server.

- Vælg et sprog (for installationen og det installerede system).

- Vælg en placering som normalt er der hvor du bor.
- Vælg et tastaturlayout (landets standard er normalt et okay valg).
- Vælg profiler fra den følgende liste:
  - **Hovedserver**
    - Dette er hovedserveren (tjener) for din skole, der tilbyder alle tjenester prækonfigureret til at virke ud af boksen. Du kan kun installere en hovedserver per skole! Denne profil inkluderer ikke en grafisk brugerflade. Hvis du ønsker en grafisk brugerflade, så vælg Arbejdsstation eller LTSP-server udover denne.
  - **Arbejdsstation**
    - En computer der starter op fra sin egen lokale harddisk, og kører alle programmer og enheder lokalt som en ordinær computer, undtaget at brugerlogind godkendes af hovedserveren, hvor brugernes filer og skrivebordsprofil gemmes.
  - **Roaming arbejdsstation**
    - Svarer til arbejdsstation men kan godkende med brug af mellemlagret akkreditiver, hvilket betyder at den kan bruges uden for skolens netværk. Brugernes filer og profiler gemmes på den lokale disk. Bærbare computere bør vælge denne profil og ikke »Arbejdsstation« eller »Uafhængig« som foreslået i tidligere udgivelser.
  - **LTSP-server**
    - Server for tynde klienter (og diskløse arbejdsstationer) også kaldt for en LTSP-server. Klienter uden harddiske starter op og kører programmer fra denne server. Denne computer kræver to netværkskort, en masse hukommelse, og ideelt mere end en processor eller kerne. Se kapitlet om netværksklienter for yderligere information om dette emne. Valg af denne profil aktiverer også arbejdsstationsprofilen (selv hvis den ikke er valgt) - en LTSP-server kan altid bruges som arbejdsstation.
  - **Uafhængig**
    - En ordinær computer som kan fungere uden en hovedserver (det vil sige, at den ikke skal være på netværket). Inkluderer bærbare computere.
  - **Minimal**
    - This profile will install the base packages and configure the machine to integrate into the Debian Edu network, but without any services and applications. It is useful as a platform for single services manually moved out from the main server.
      In case ordinary users should be able to use such a system, it needs to be added using GOsa[2] (similar to a workstation) and the libpam-krb5 package needs to be installed.

  The **Main Server**, **Workstation** and **LTSP Server** profiles are preselected. These profiles can be installed on one machine together if you want to install a so called *combined main server*. This means the main server will be an LTSP server and also be used as a workstation. This is the default choice, since we assume most people will want it. Please note that you must have 2 network cards installed in a machine which is going to be installed as a combined main server or as an LTSP server to become useful after the installation.
- Sig »ja« (yes) eller »nej« (nej) til automatisk partitionering. Vær opmærksom på at »ja« vil slette alle data på harddiskene! »Nej« vil på den anden side kræve mere arbejde - du skal så sikre dig, at de krævede partitioner oprettes og er store nok.
- Sig venligst »ja« (yes) til at indsende information til https://popcon.debian.org/ så vi ved hvilke pakker der er populære og derfor skal bevares i fremtidige versioner. Selvom det ikke er et krav, er det en nem måde at hjælpe. 
- Wait. If the selected profiles include LTSP Server then the installer will spend quite some time at the end, "Finishing the installation - Running debian-edu-profile-udeb...".
- Efter angivelse af root-adgangskoden (administratoradgangskoden) vil du blive bedt om at oprette en normal brugerkonto »for ikkeadministrative opgaver«. For Debian Edu er denne konto meget vigtig: Det er kontoen du vil bruge til at håndtere Skolelinux-netværket.

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

- 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
```

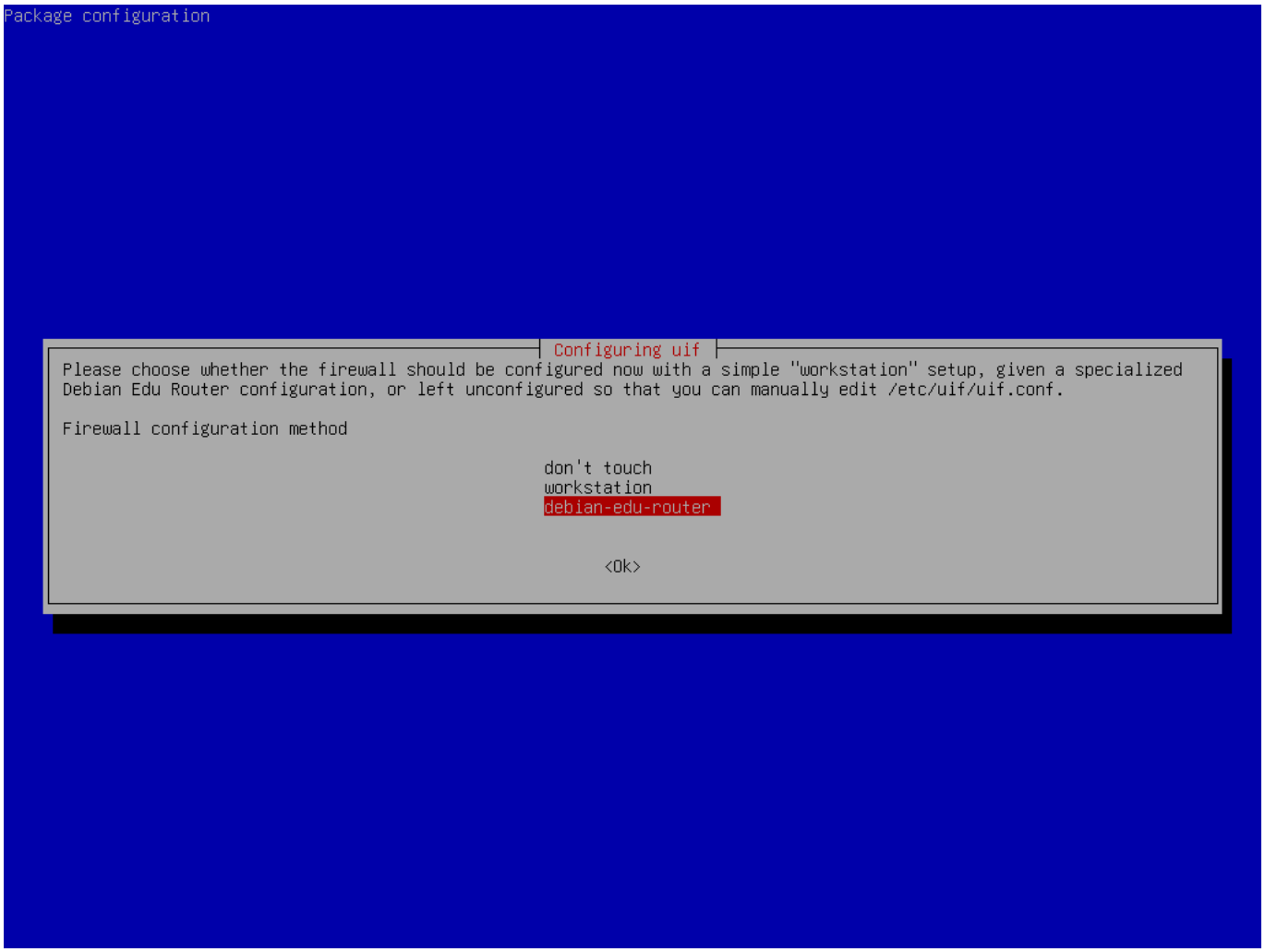
can be used.

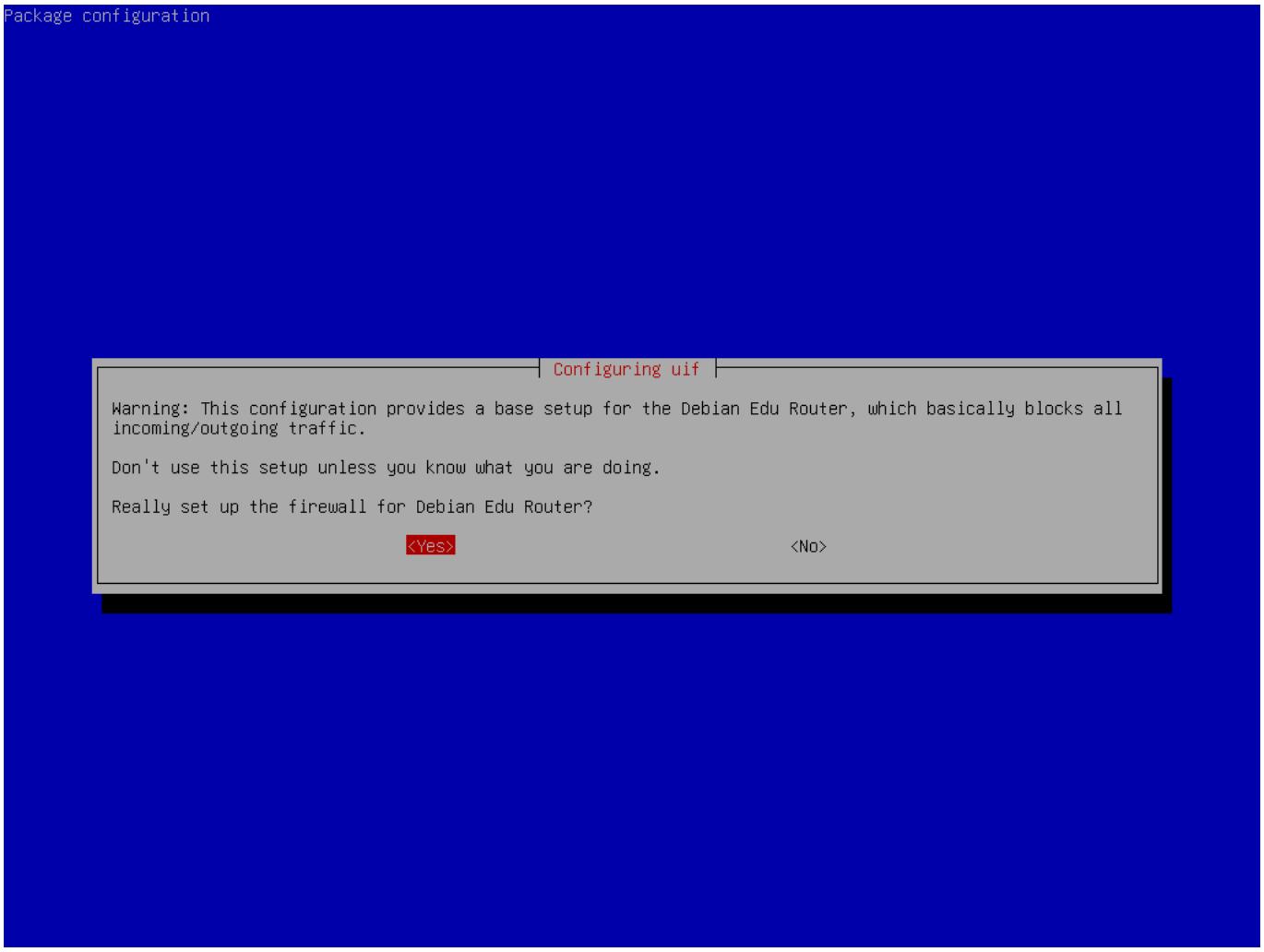
Remove the configuration of the two network interfaces to be used from `/etc/network/interfaces` or files in `/etc/network/interfaces.d/` and un-configure the two interfaces using

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

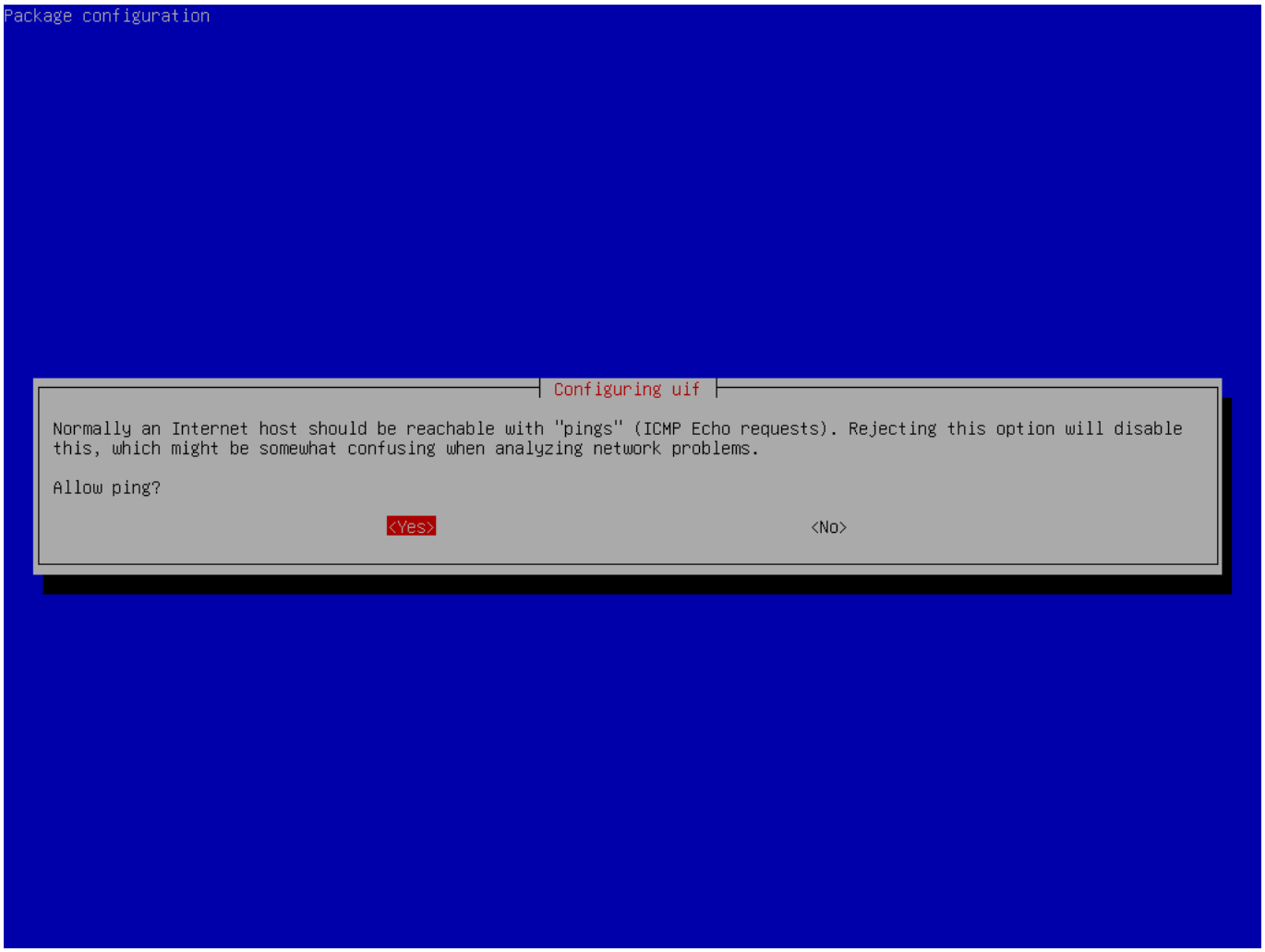
The actual configuration process is started with

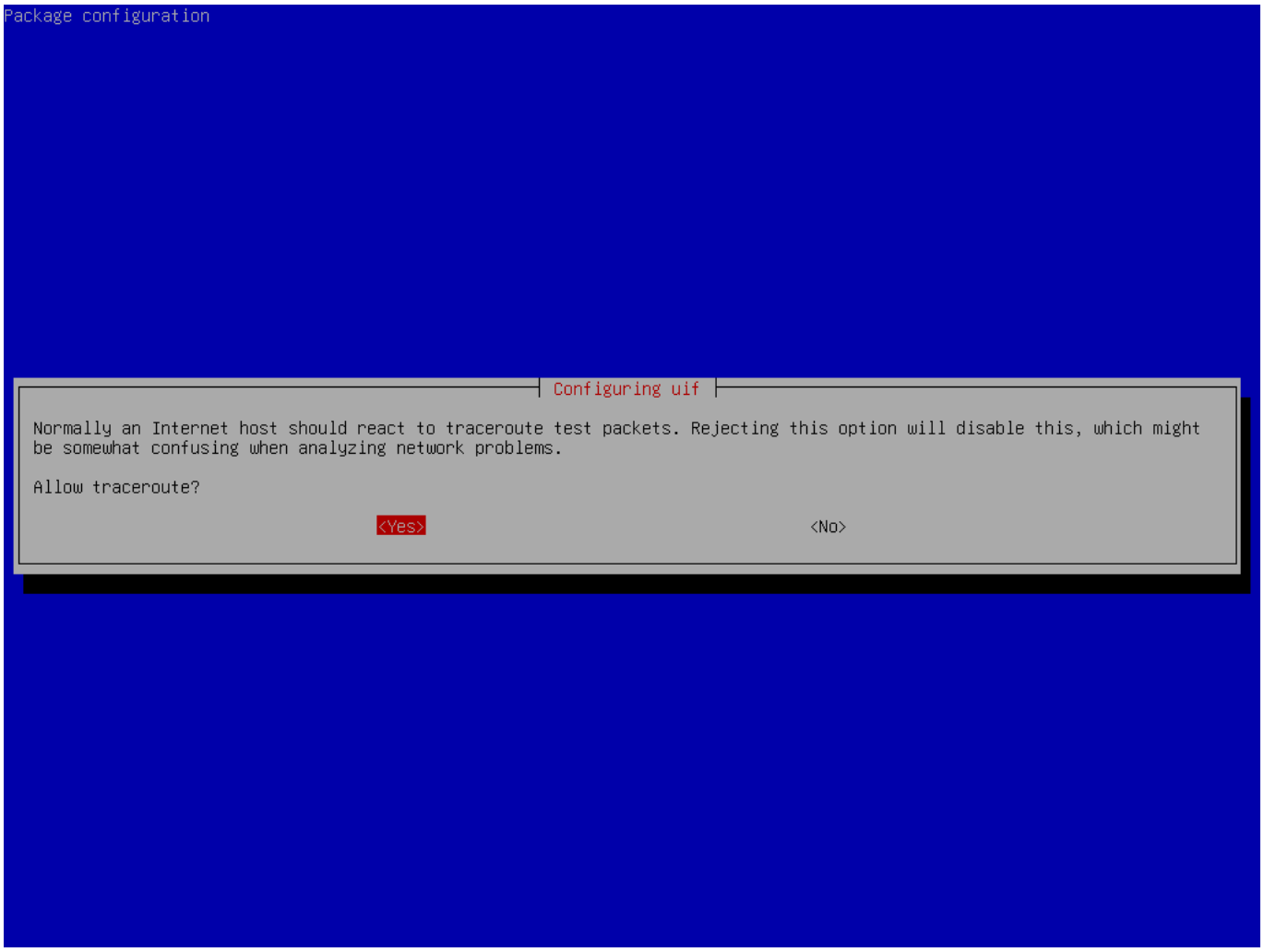
```
dpkg-reconfigure --force uif debian-edu-router-config
```


Package configuration
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>

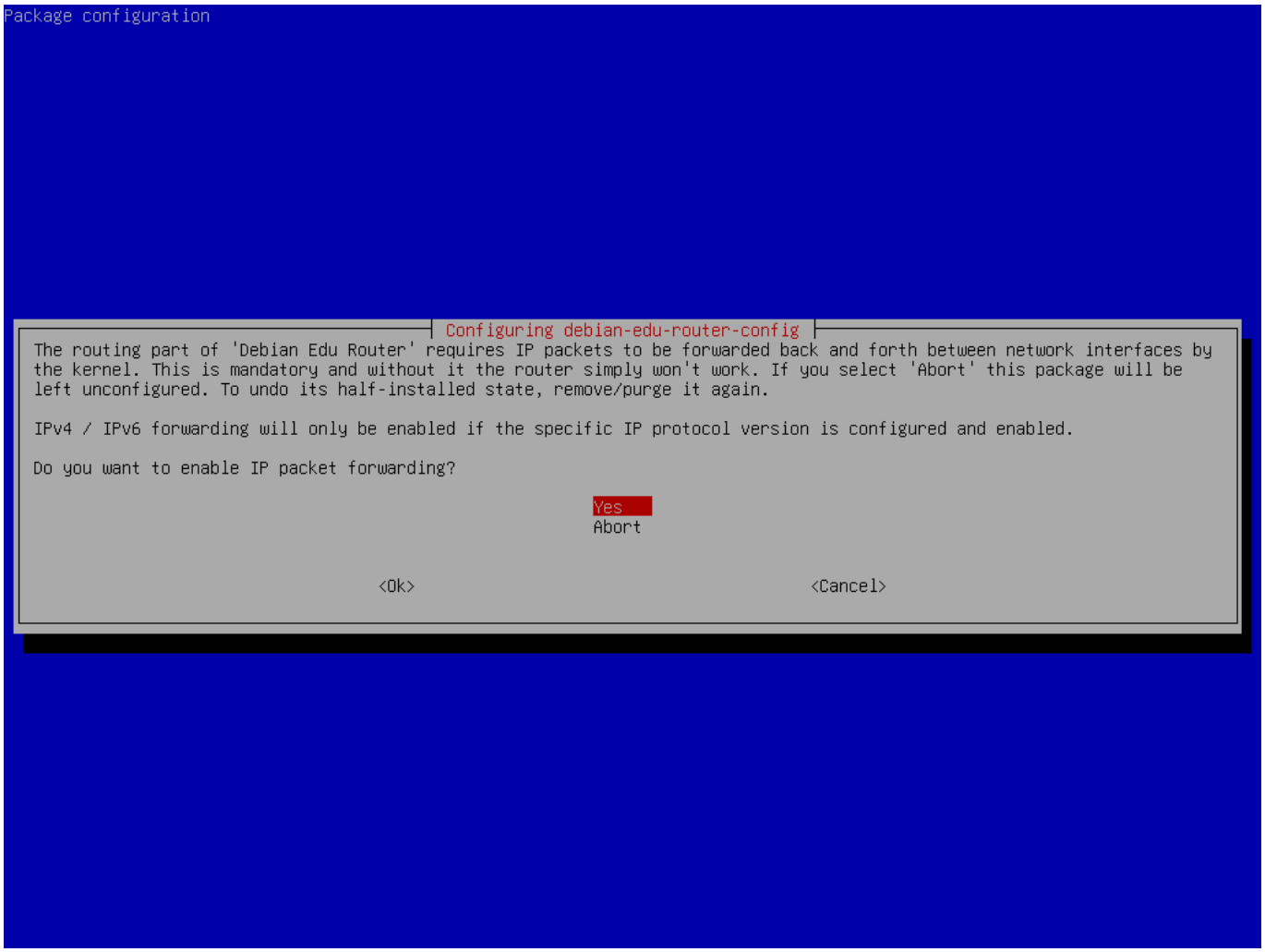


When asked about the uif firewall configuration method choose "debian-edu-router". Confirm that you want to set up the firewall for Debian Edu Router.

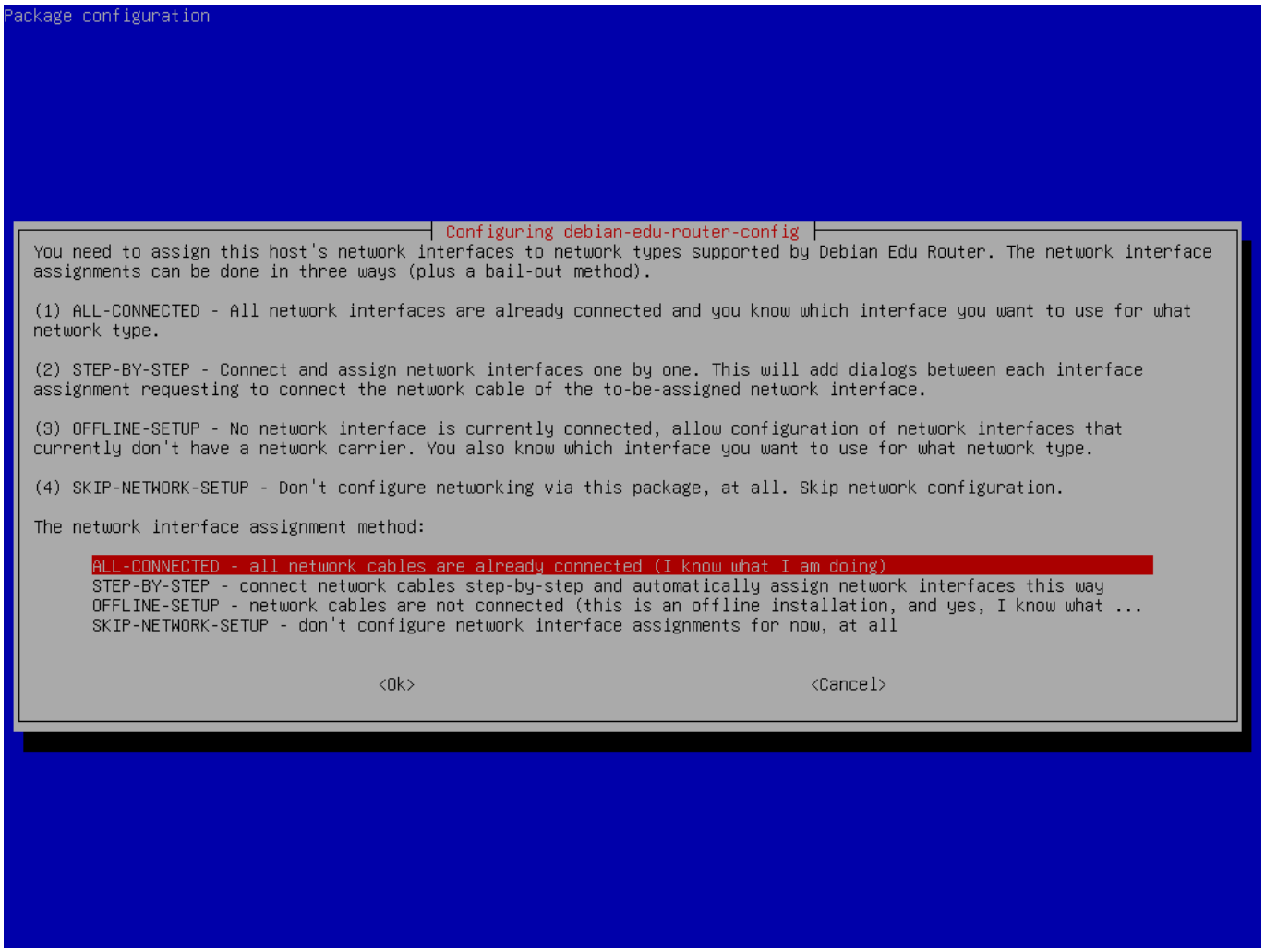

Package configuration
Configuring uif
Normally an Internet host should be reachable with "pings" (ICMP Echo requests). Rejecting this option will disable this, which might be somewhat confusing when analyzing network problems.
Allow ping?
<Yes>
<No>



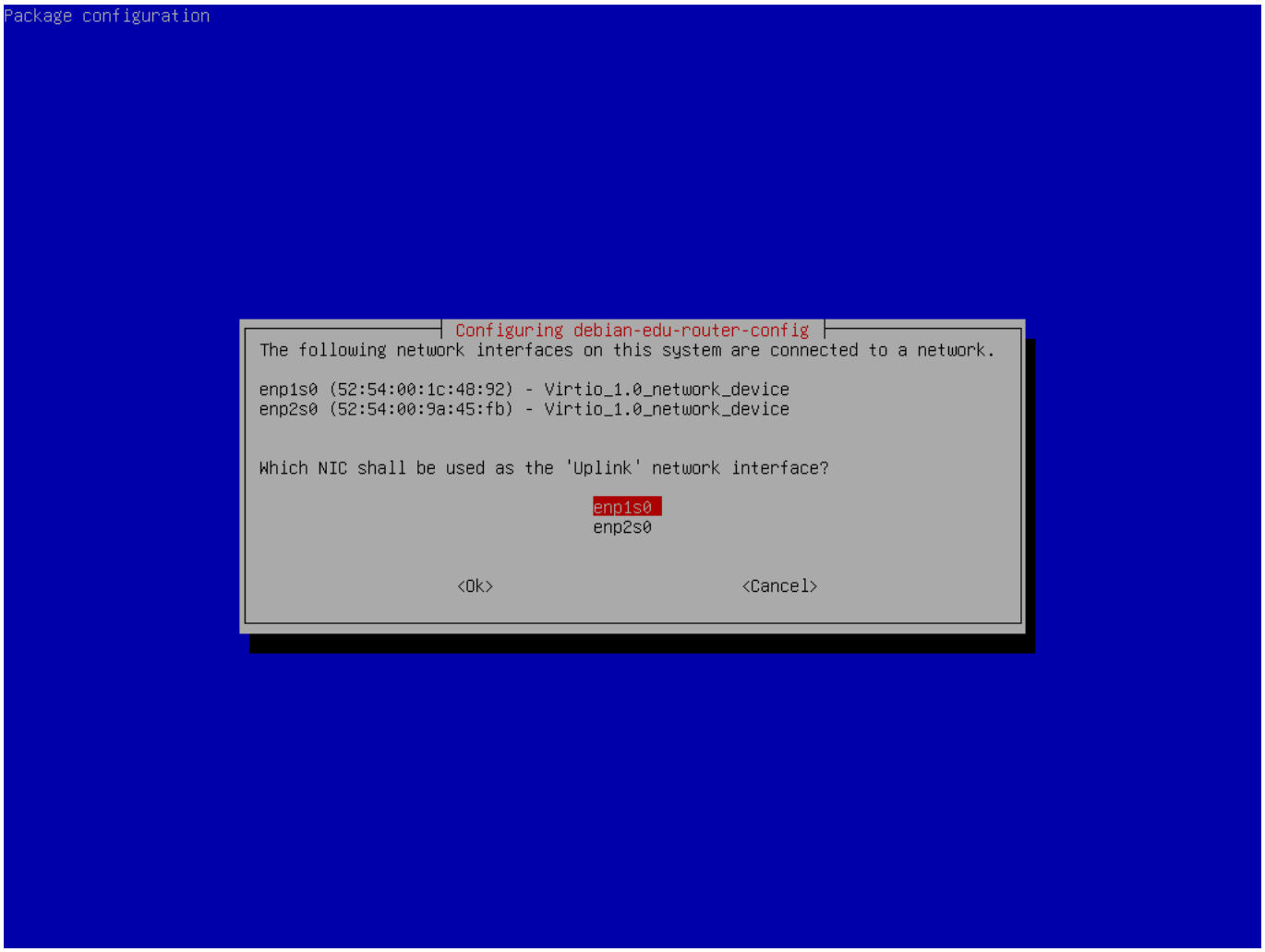
Decide whether you want to respond to ping and traceroute. If unsure answer with yes as it can be useful for diagnosing network issues.



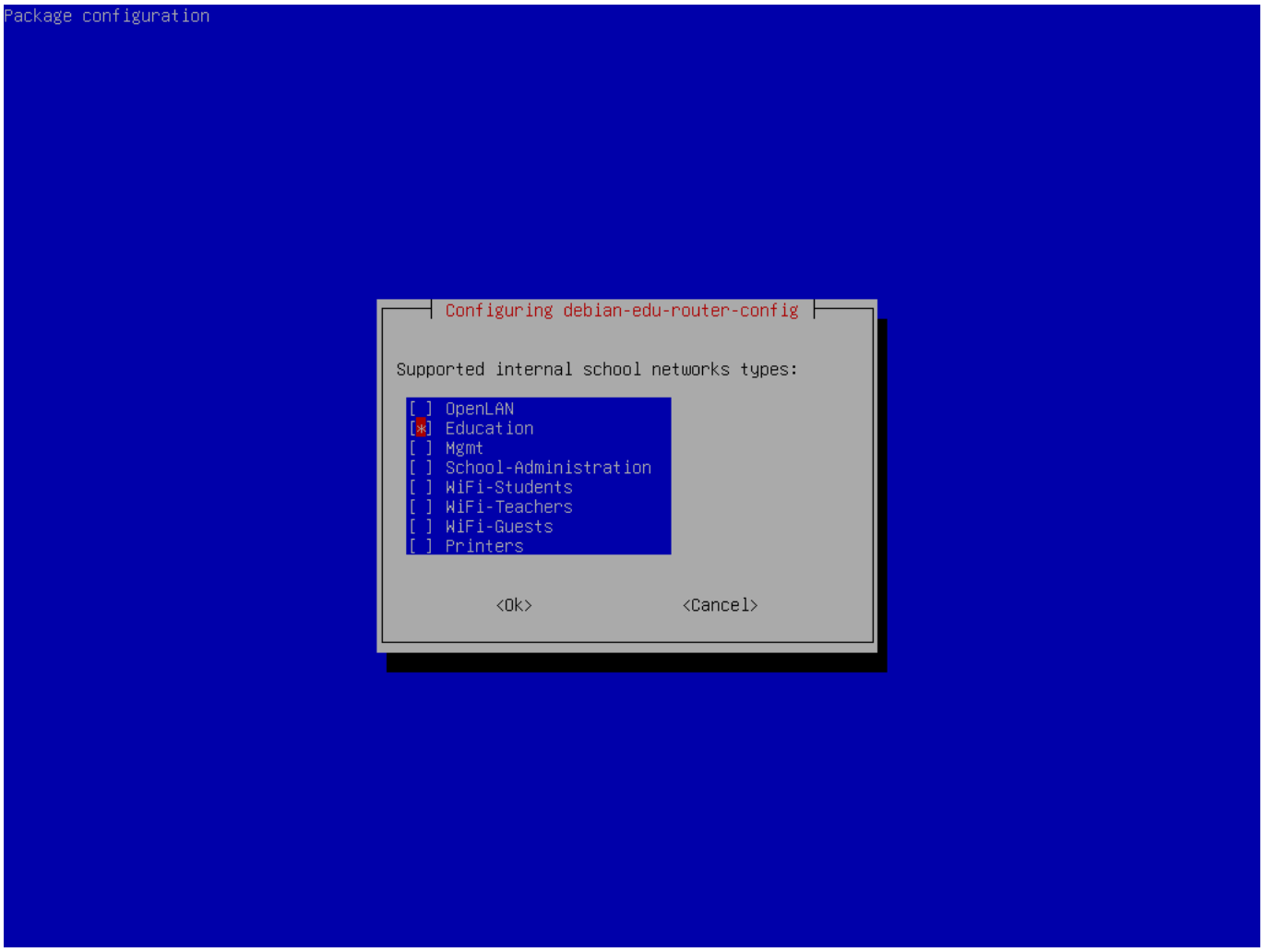
Confirm that you want to enable IP packet forwarding.



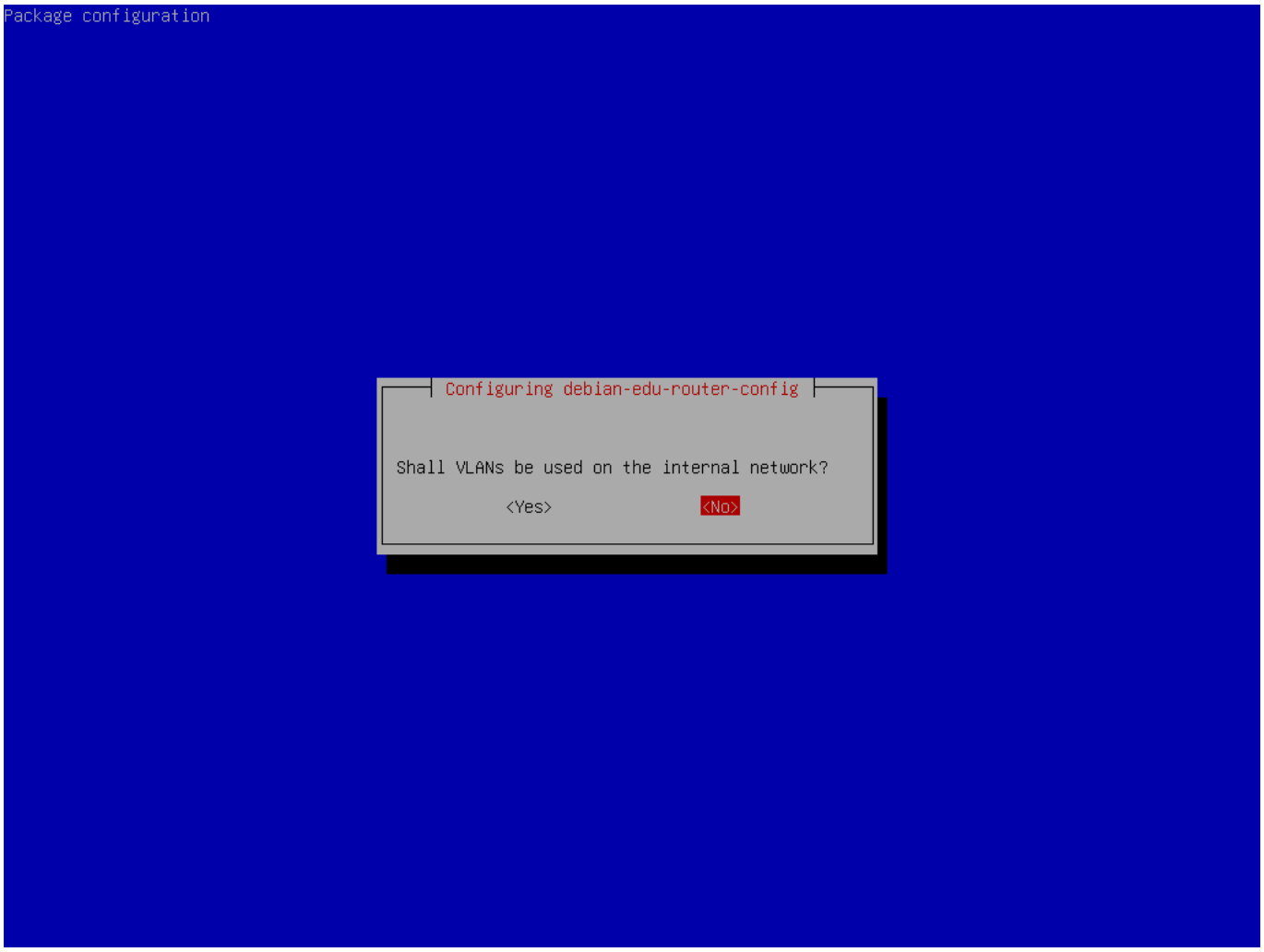
Next, assign networks to the network interfaces in your router, choose one of the offered options depending on whether your network interfaces are already connected or not.



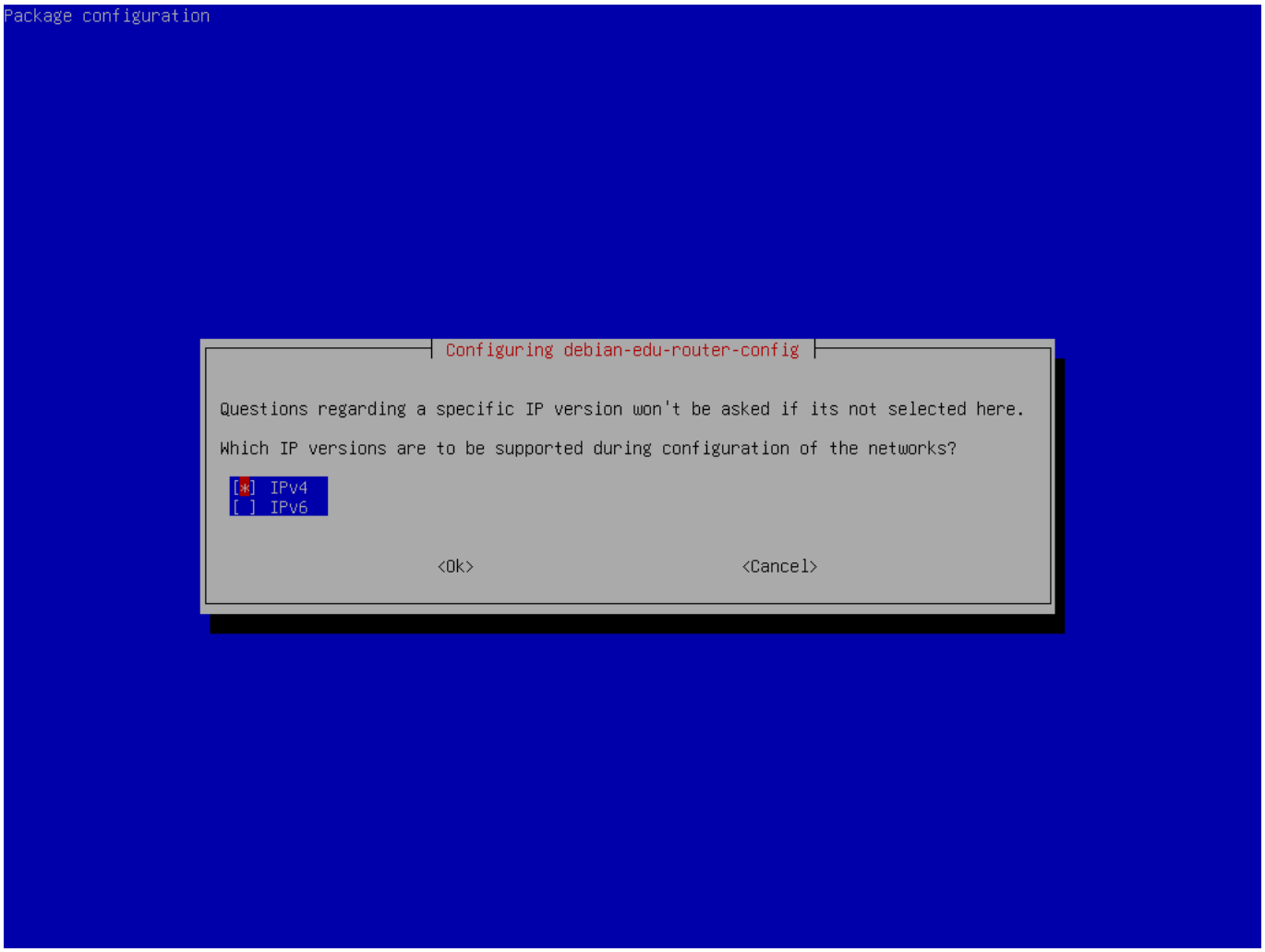
Select the interface which is connected to the upstream network.



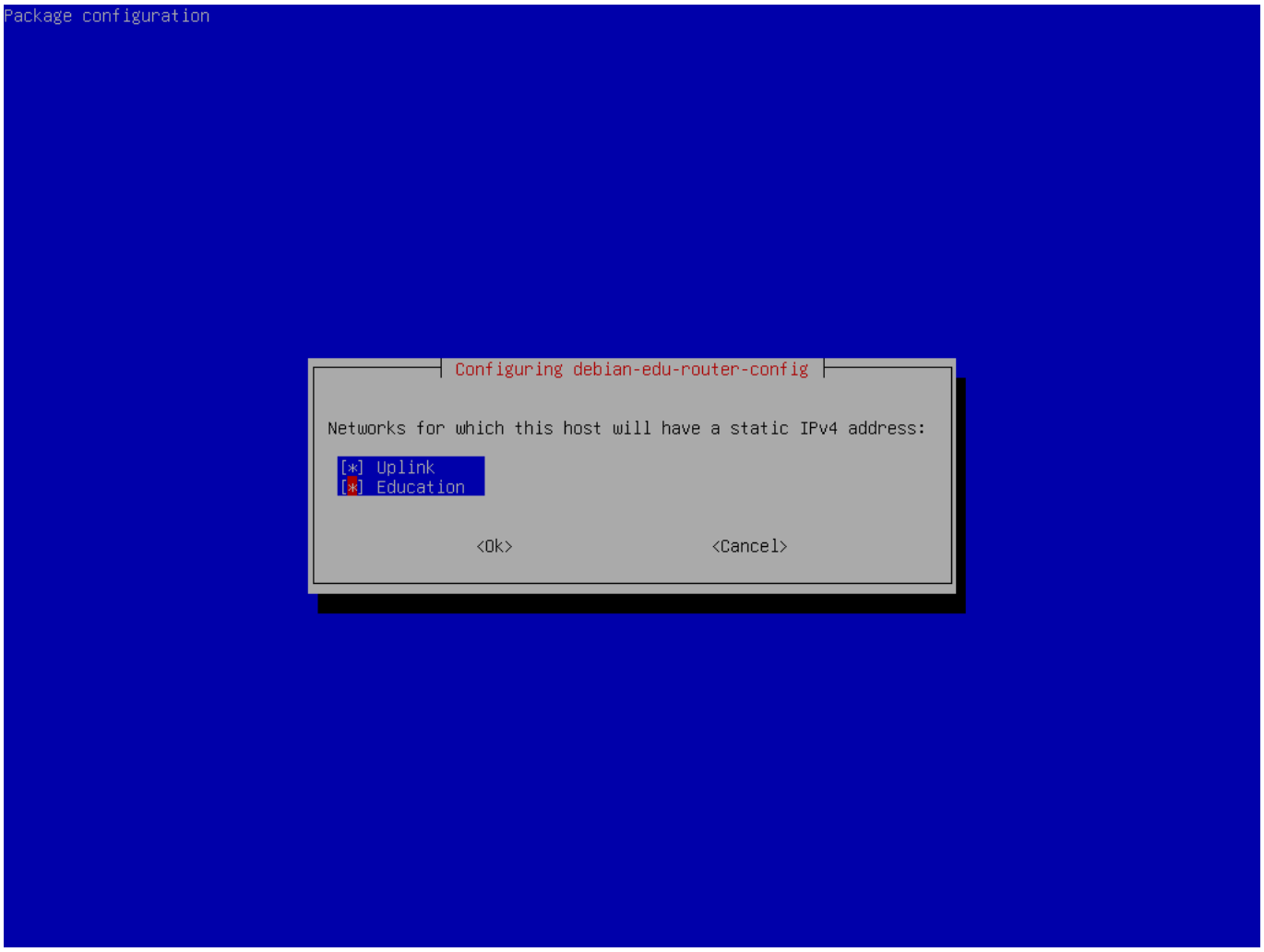
Select an internal network, in case you are unsure and simply want a single internal network select "Education"here.



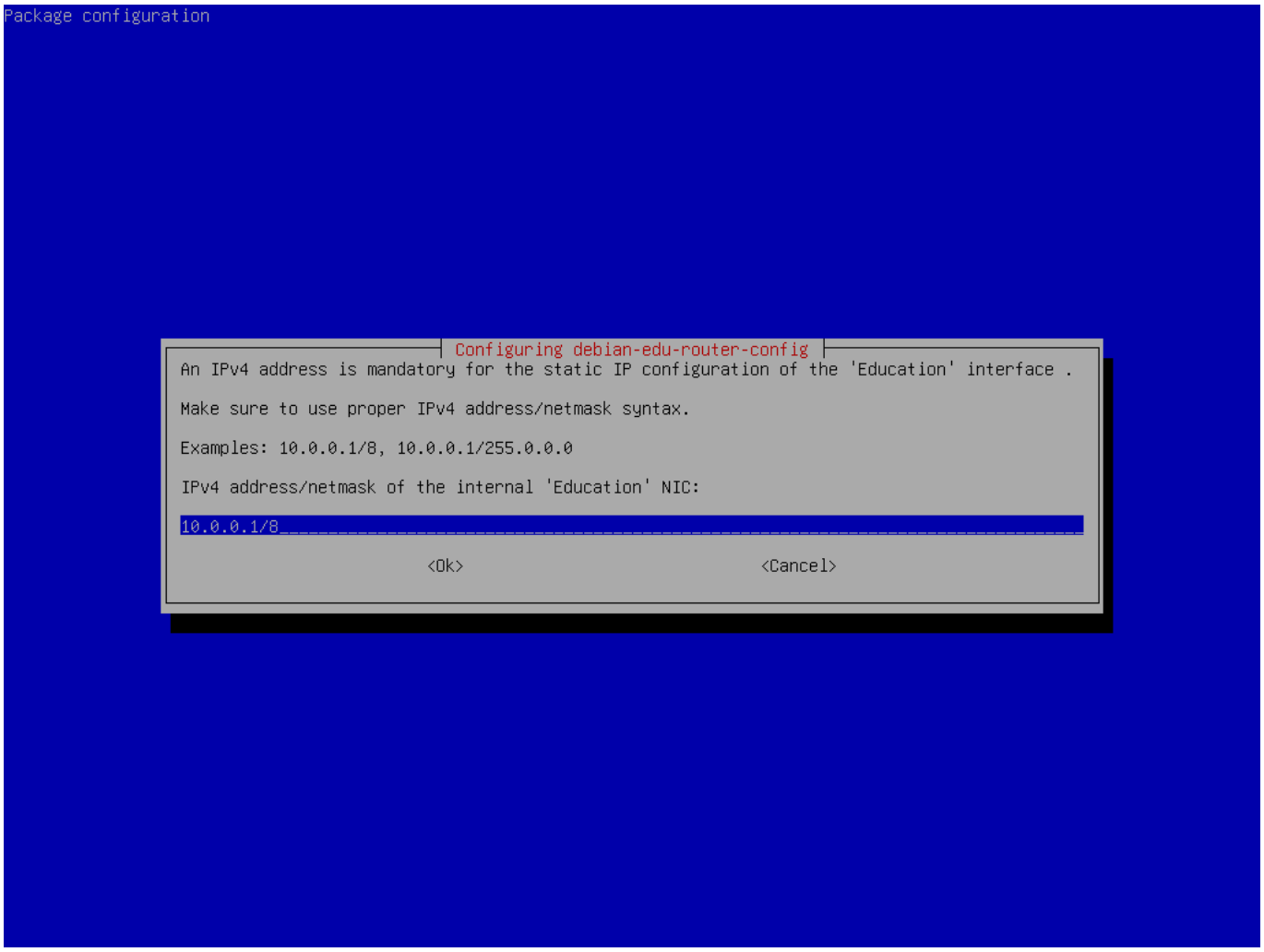
Select whether VLANs should be used for internal networks, if you are unsure select no here.



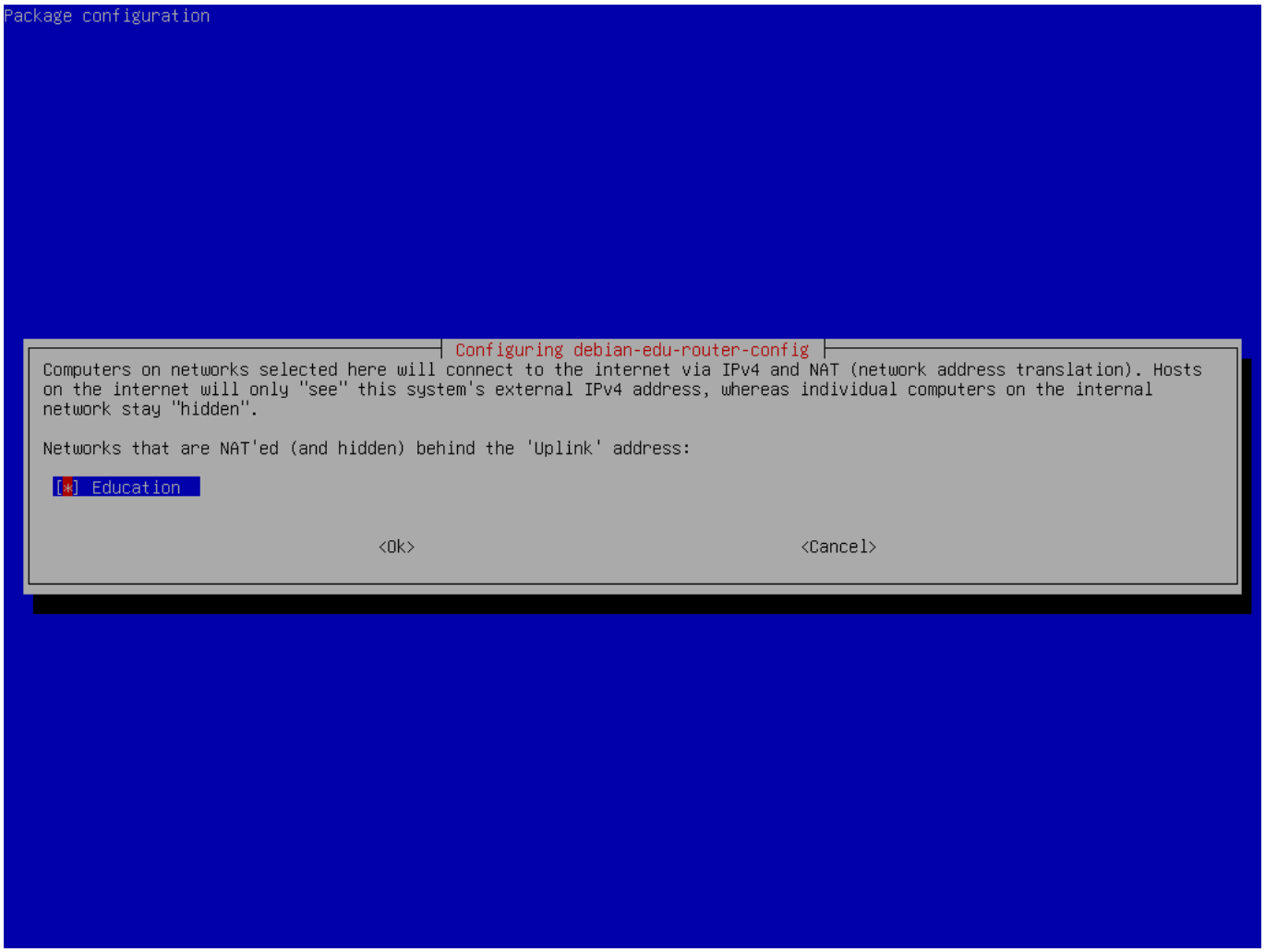
Select "IPv4"here.



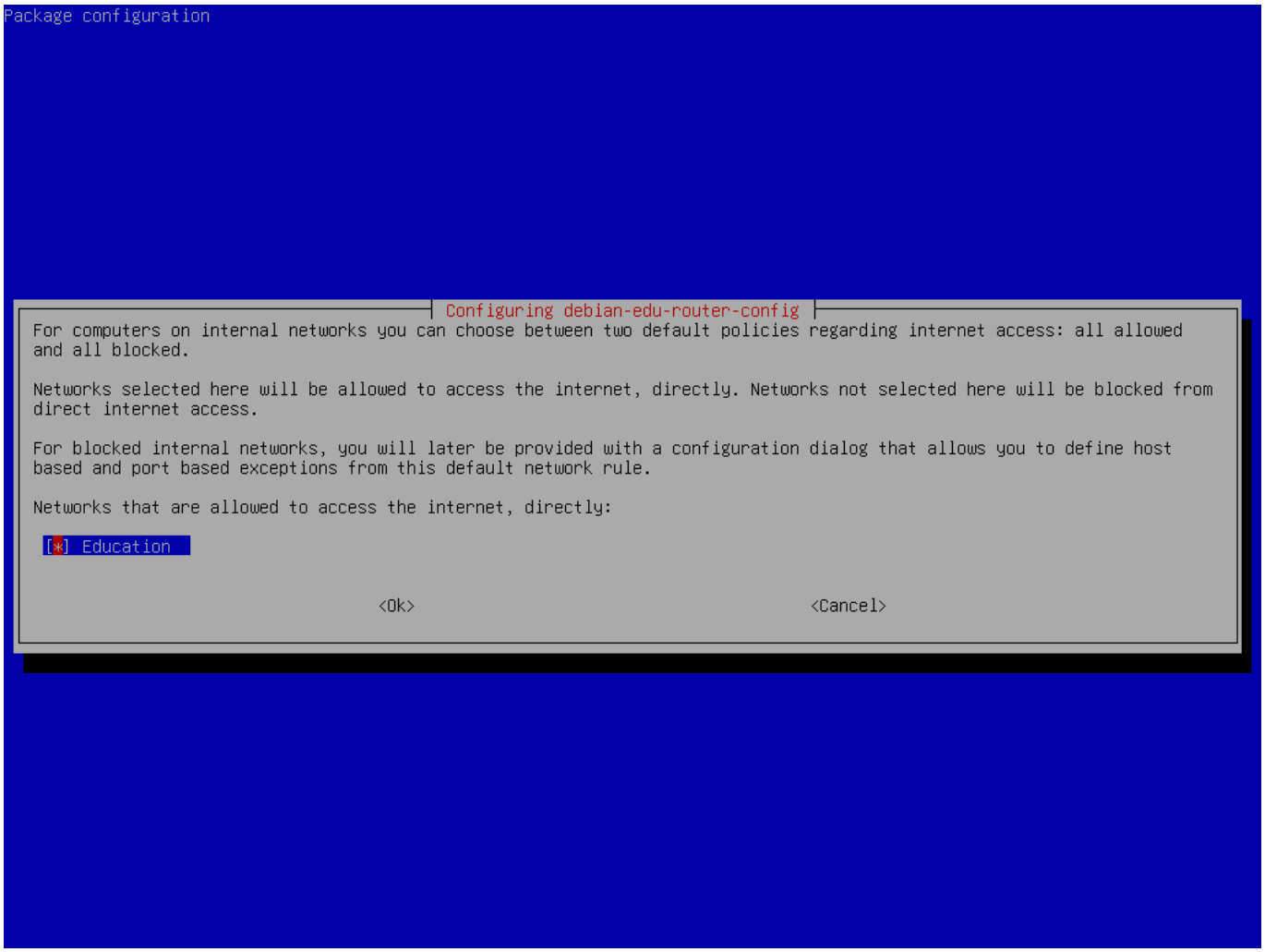
Select "Uplink"if your upstream network requires a static IP address and, if you followed the above suggestion on internal networks, "Education".



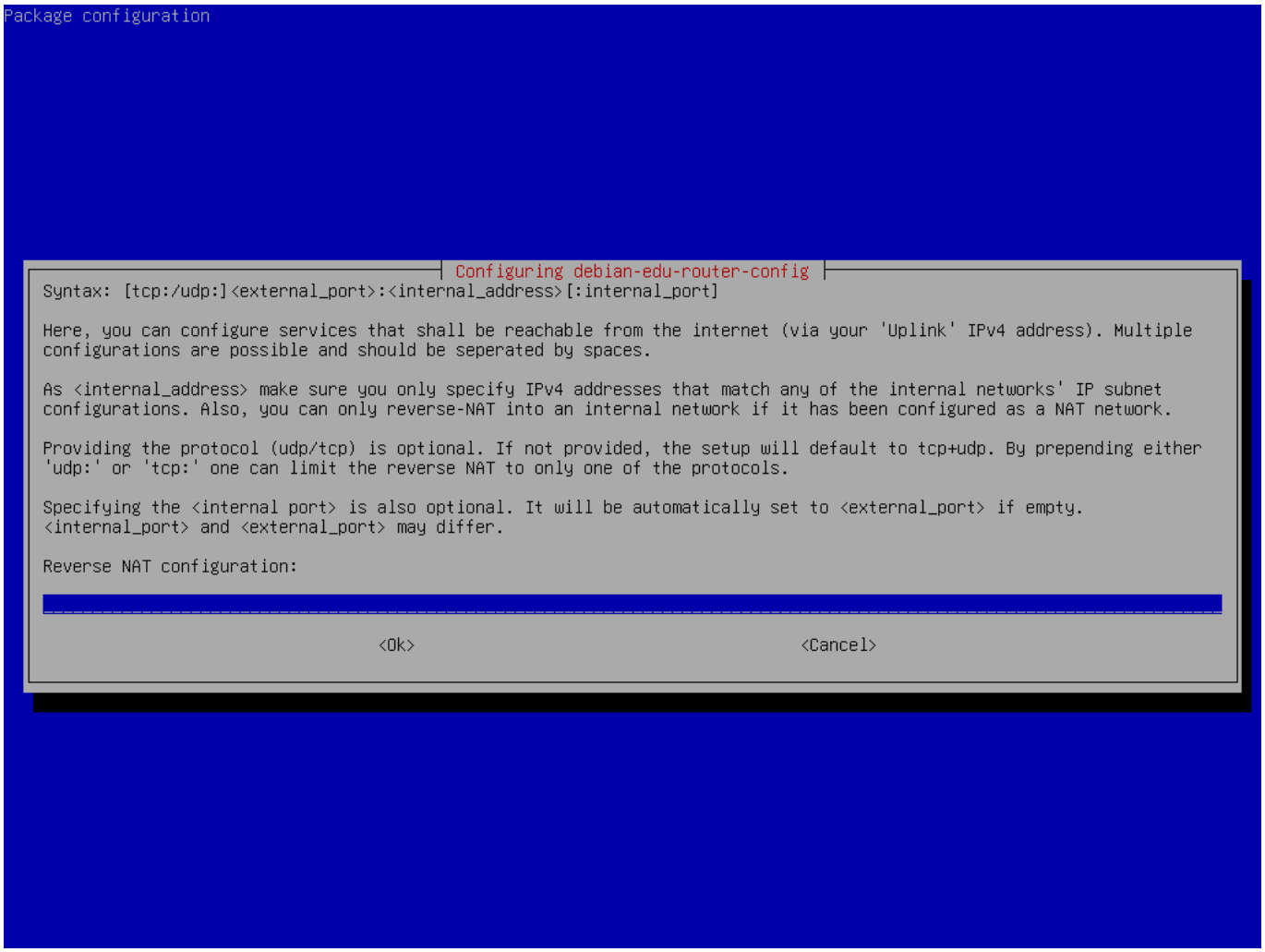
Set `10.0.0.1/8` as the static IP address for the internal network "Education"if you followed the above suggestion on internal networks.



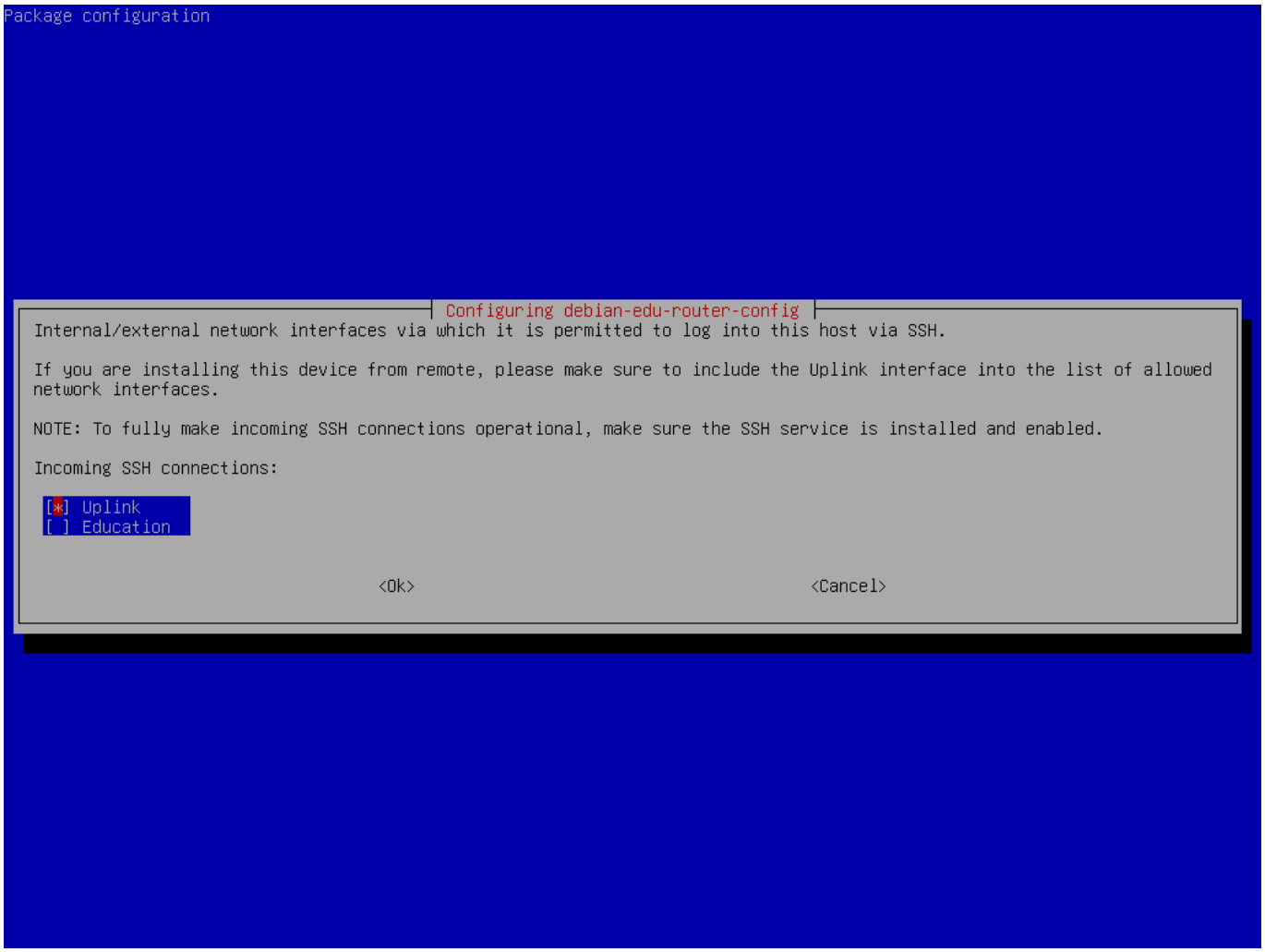
Enable NAT for the internal network.



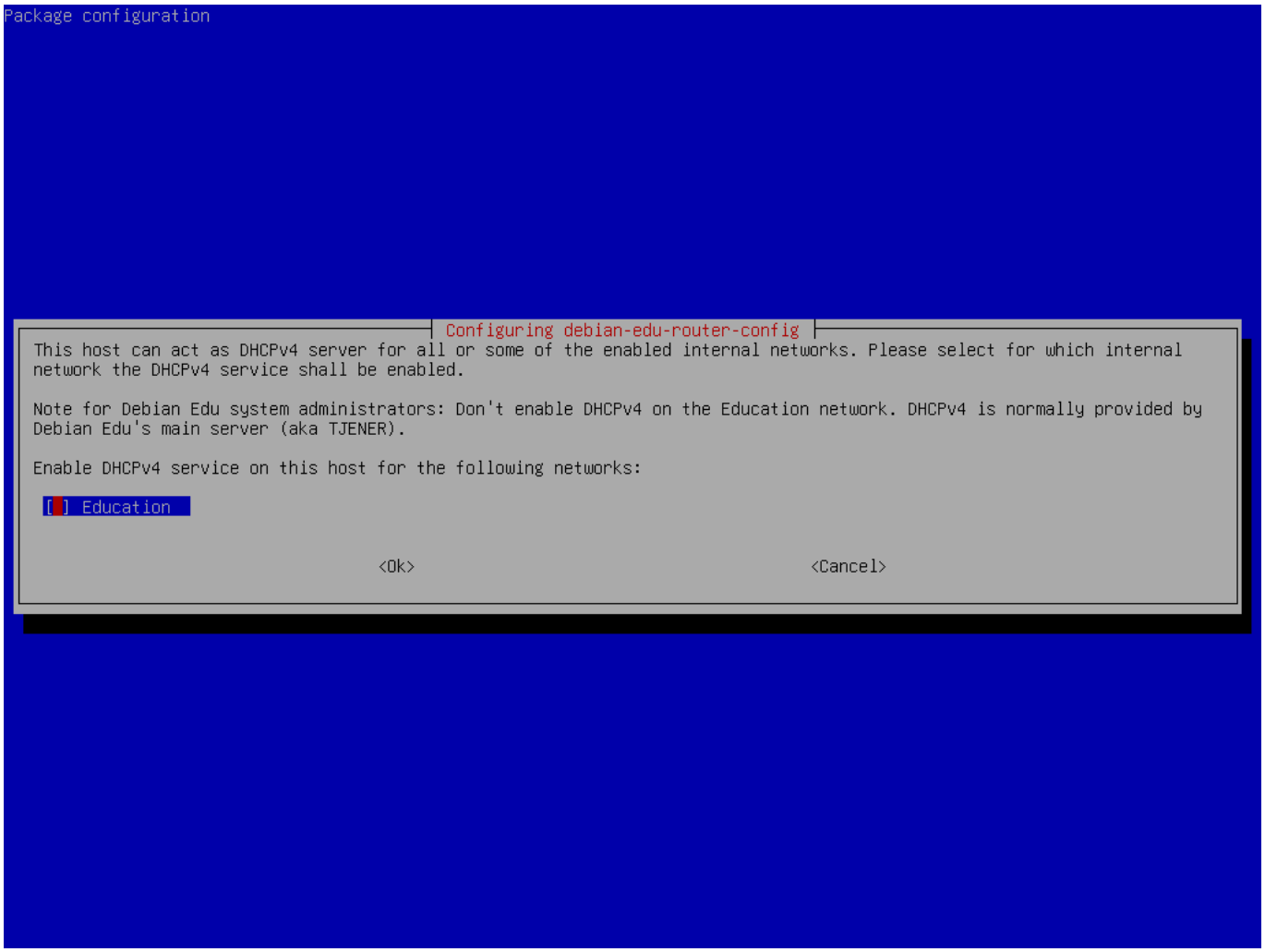
Enable internet access for internal networks.



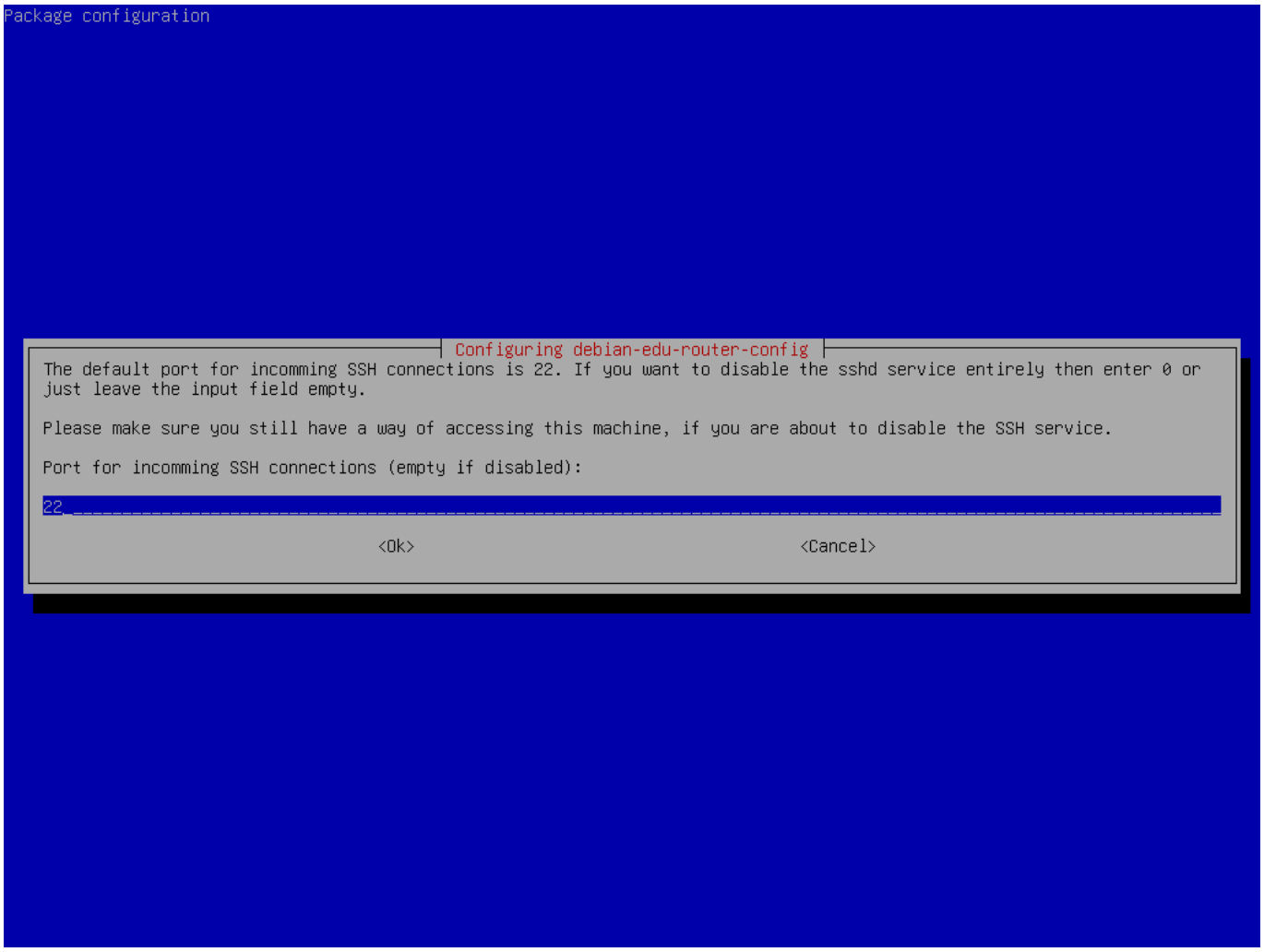
If you want to expose any internal services to the internet you can configure them using the described syntax. Note that SSH access to the gateway can be configured using the following dialog.



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

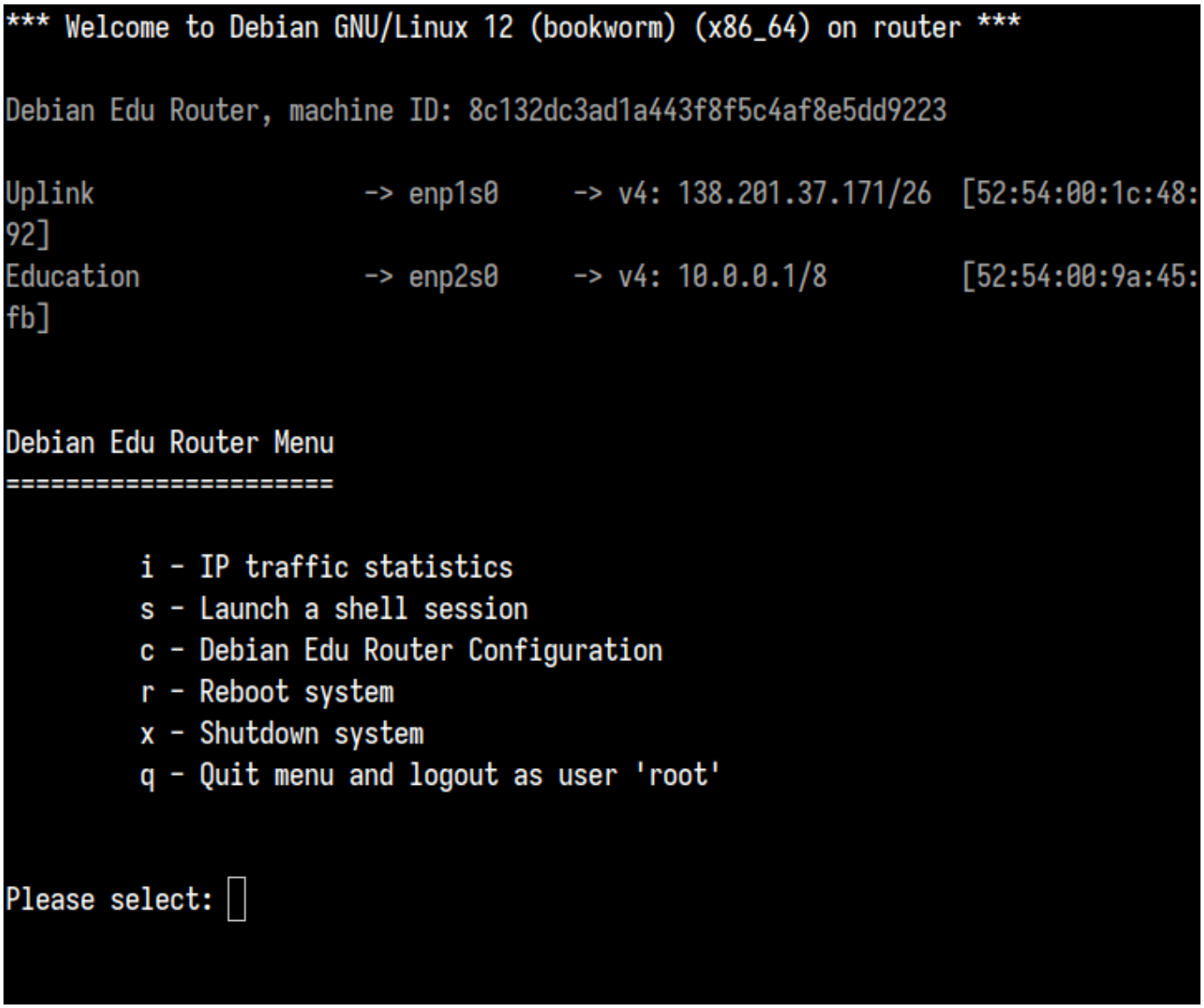


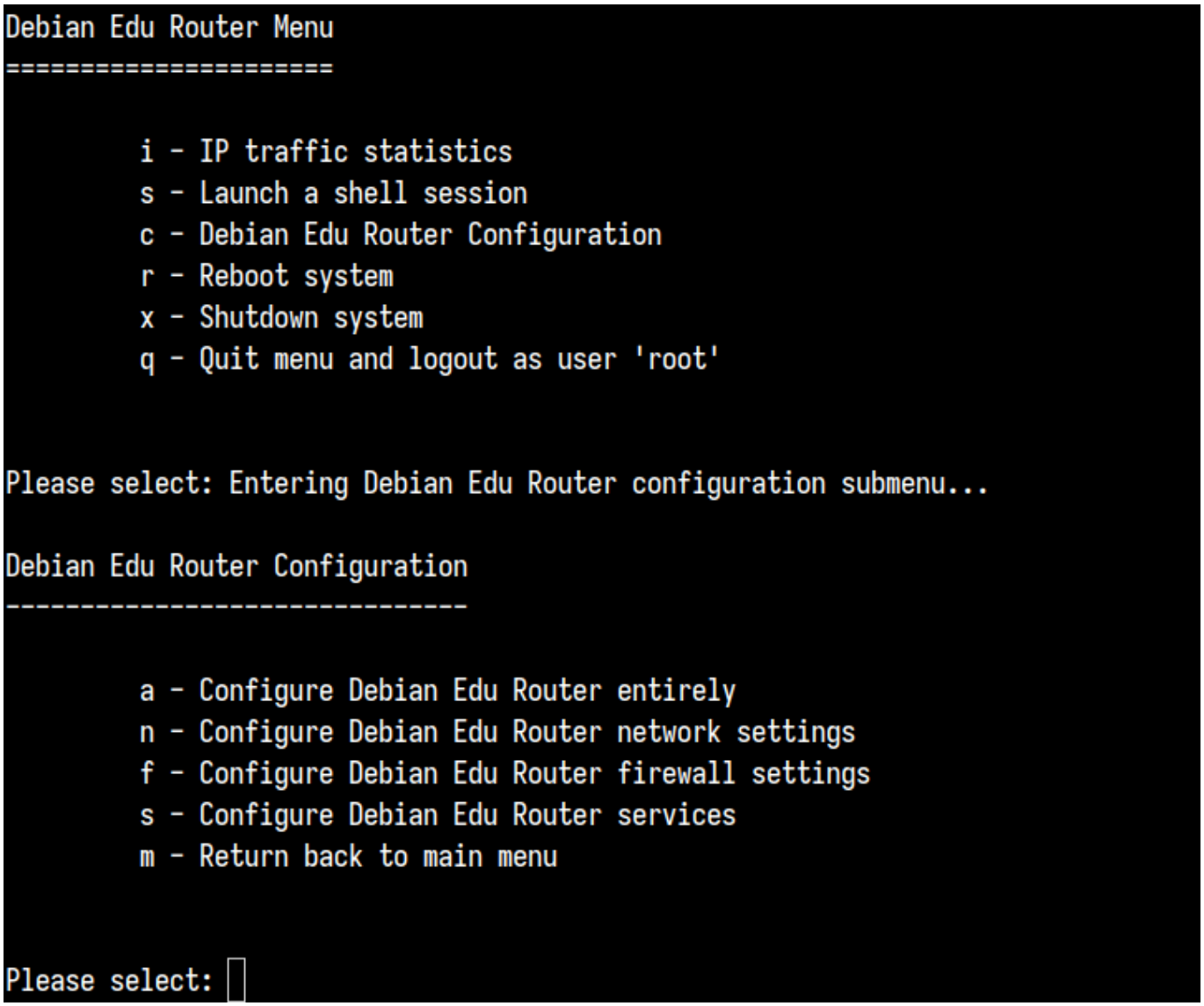
Do not enable DHCP for the internal networks, it will be offered by the Debian Edu main server.



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

Connect the network interfaces if you have not already done so and reboot the machine. Now, when you logging in as a root you should see Debian Edu Router Menu.


*** 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:



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 Bemærkninger om nogle karakteristika

6.3.7.1 En bemærkning om bærbare

Højst sandsynlig vil du ønske at bruge profilen »Roaming workstation« (se ovenfor). Vær opmærksom på at alle data gemmes lokalt (så lav nogle ekstra sikkerhedskopier) og logindakkreditiver mellemlagres (så efter en ændring af adgangskode, kan logind kræve din gamle adgangskode, såfremt du ikke har forbundet din bærbare til netværket og logget ind med din nye adgangskode).

6.3.7.2 En kort bemærkning om installationer via USB-drev/blue-ray-aftryk

Efter du har installeret fra USB-drevet/blue-ray-aftrykket, vil `/etc/apt/sources.list` kun indeholde bestemte kilder fra aftrykket. Hvis du har en internetforbindelse, så anbefaler vi kraftigt at tilføje de følgende linjer til listen, så at tilgængelige sikkerhedsopdateringer kan blive installeret:

```
deb http://deb.debian.org/debian/ bookworm main
deb http://security.debian.org bookworm-security main
```

6.3.7.3 En bemærkning om cd-installationer

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 Installation med brug af USB-drev i stedet for cd'er/blue-ray-diske

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
```

To determine the value of X, run this command before and after the USB device has been inserted:

```
lsblk -p
```

Please note that copying will take quite some time.

Afhængig af hvilket aftryk du vælger, så vil USB-drevet opføre sig på samme måde som en cd eller blue-ray.

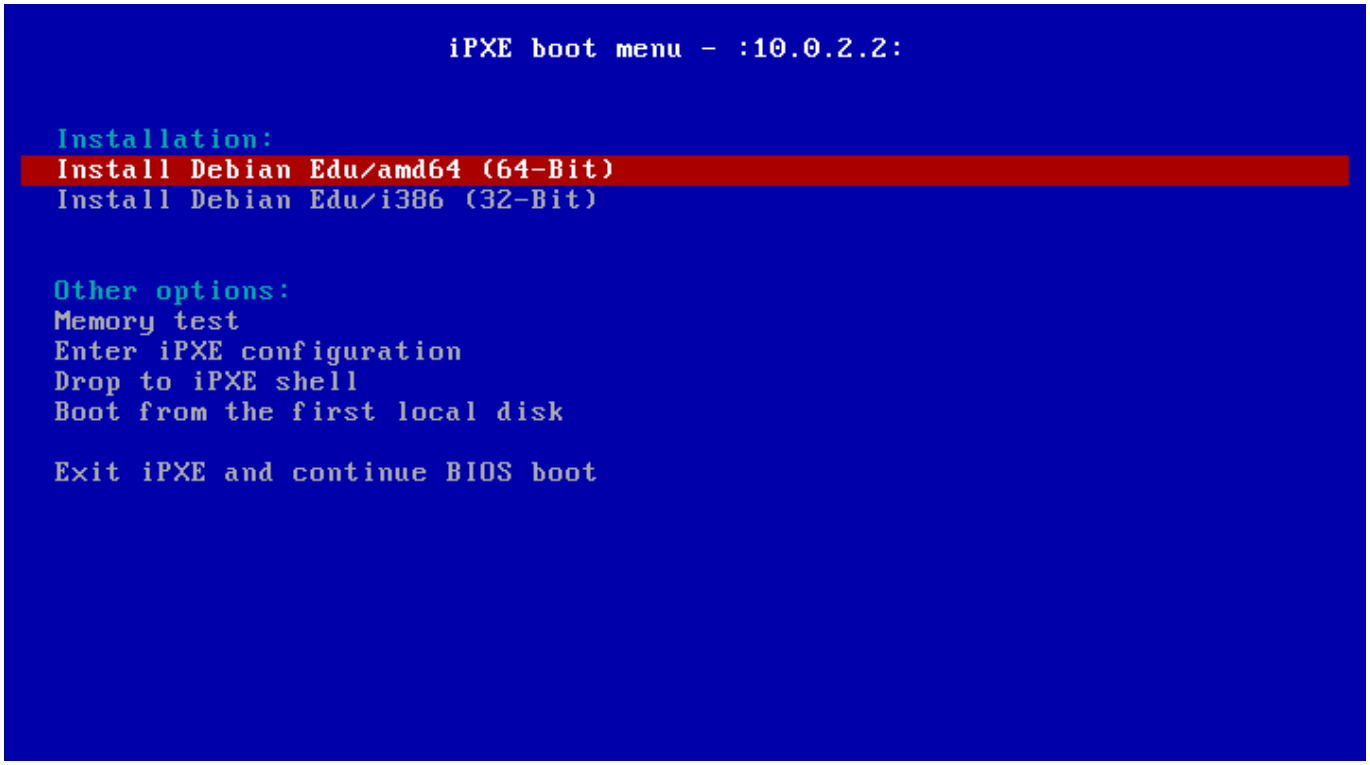
6.3.9 Installation and booting over the network via PXE

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:

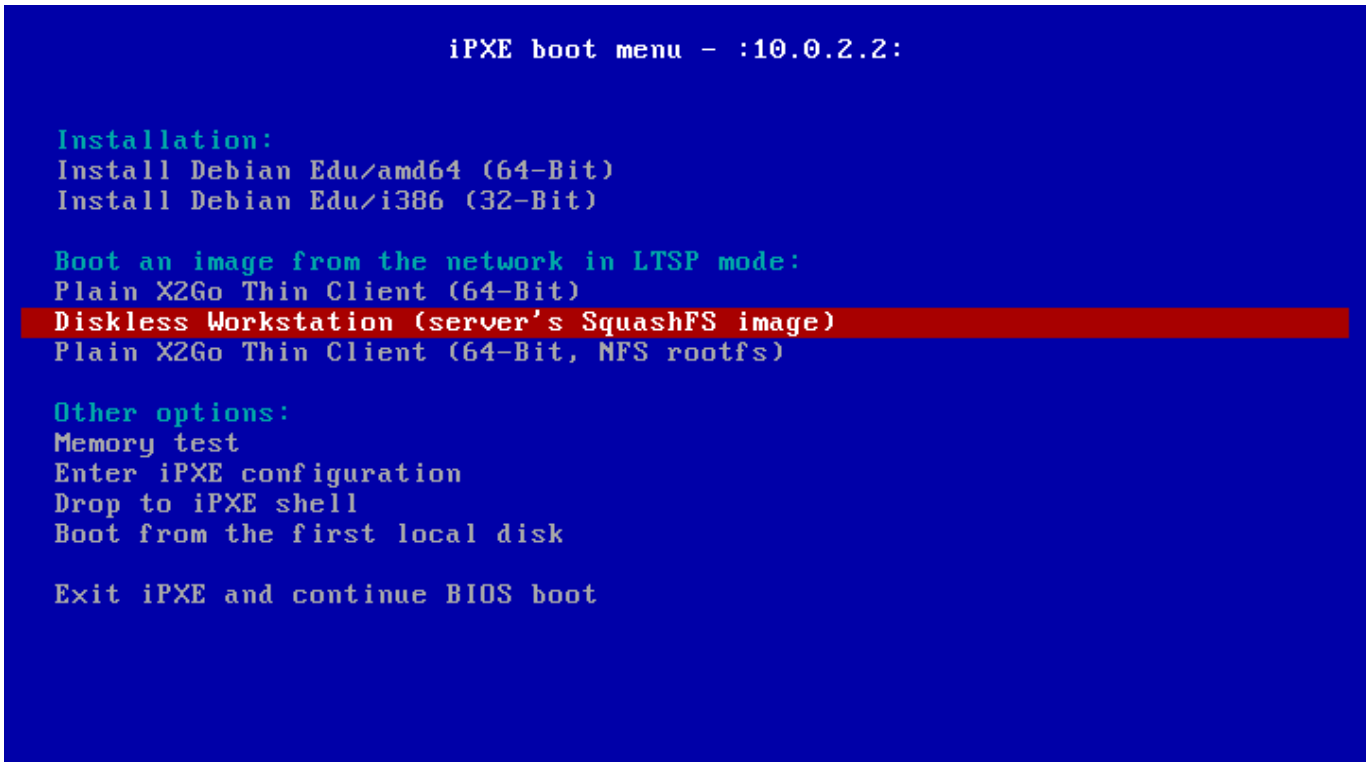
```
/usr/share/debian-edu-config/tools/pxe-addfirmware
```

on the server.

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



Det er sådan her at iPXE-menuen ser ud kun med profilen for **hovedserveren**:



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[2].

Yderligere information om netværksklienter kan findes i kapitlet om Sådan fungerer netværksklienter.

6.3.10 Ændring af PXE-installationer

PXE-installationen bruger en forudfyldt fil (preseed) for debianinstallationsprogrammet, som kan ændres til at spørge om hvilke pakker der skal installeres.

En linje som den følgende skal tilføjes til `tjener:/etc/debian-edu/www/debian-edu-install.dat`

```
d-i    pkgsel/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.local` and to run `/usr/sbin/debian-edu-pxeinstall` to update the generated files.

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

For at deaktivere eller ændre brugen af proxyen når der installeres via PXE, så skal linjerne der indeholder `mirror/http/proxy`, `mirror/ftp/proxy` og `preseed/early_command` i `tjener:/etc/debian-edu/www/debian-edu-install.dat` ændres. For at deaktivere brugen af en proxy når der installeres så placer »#« forrest i de to linjer og fjern delen "`export http_proxy="http://webcache:3128";` "fra den sidste.

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 aftryk

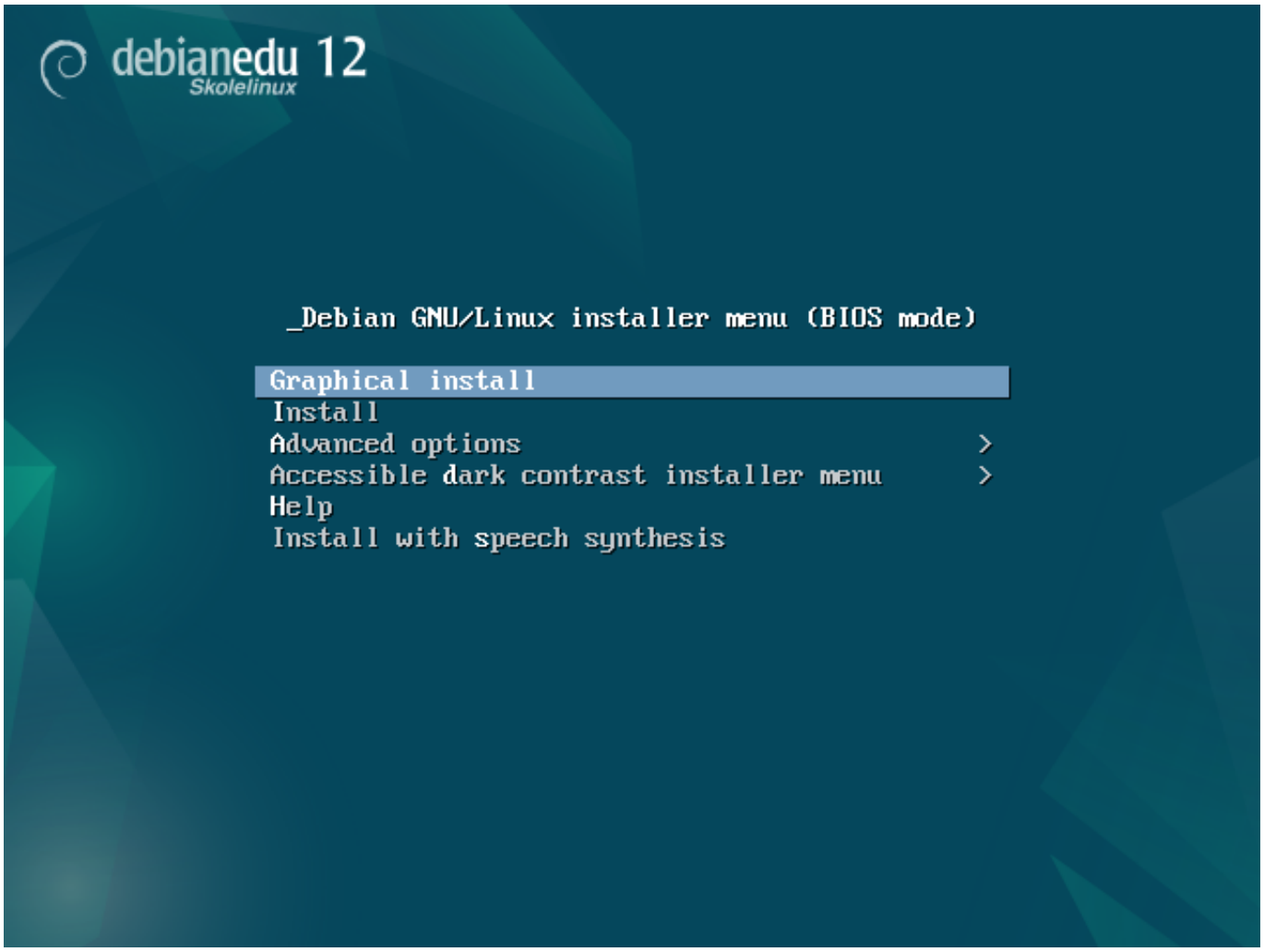
Oprettelse af tilpassede cd'er, dvd'er eller blue-ray-diske kan være ret nemt, da vi bruger installationsprogrammet for Debian, som har et modulært design og andre gode funktioner. Preseeding giver dig mulighed for at definere svar på spørgsmål som normalt stilles.

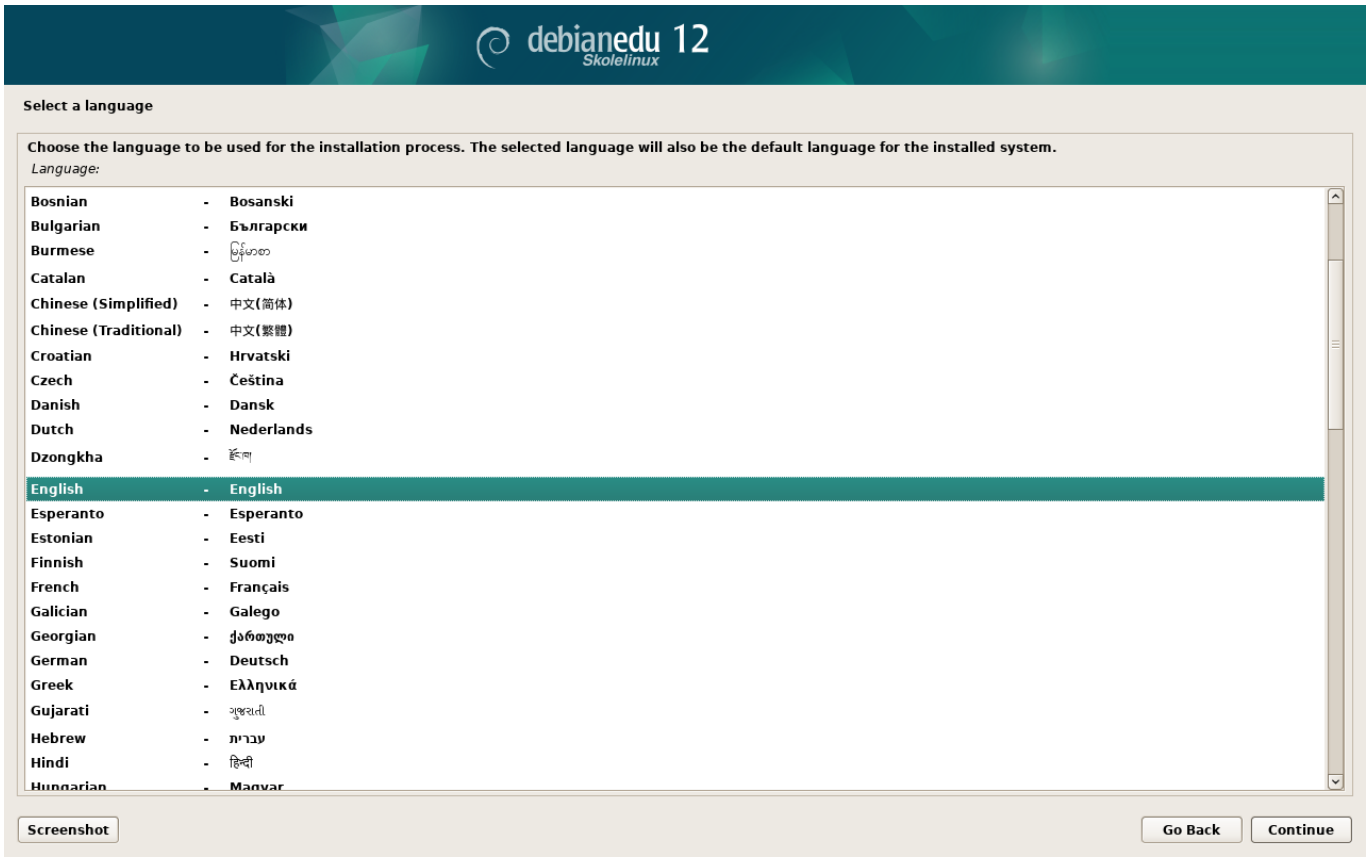
Så alt du skal gøre er at oprette en forudfyldt fil (preseed) med dine svar (dette er beskrevet i appendikset i manualen for Debianinstallationsprogrammet) og genskriv cd'en/dvd'en.

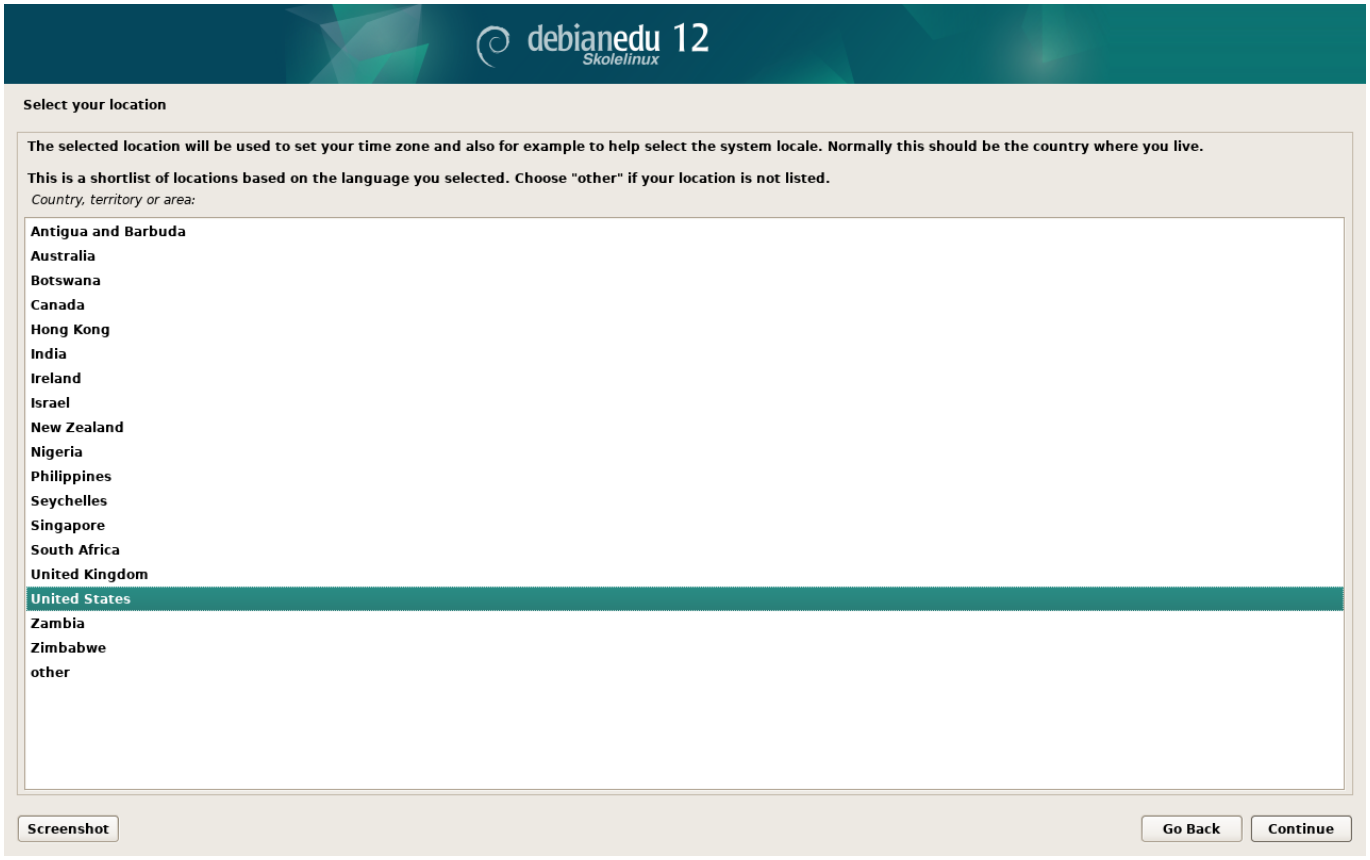
6.4 Visning af skærmbilleder

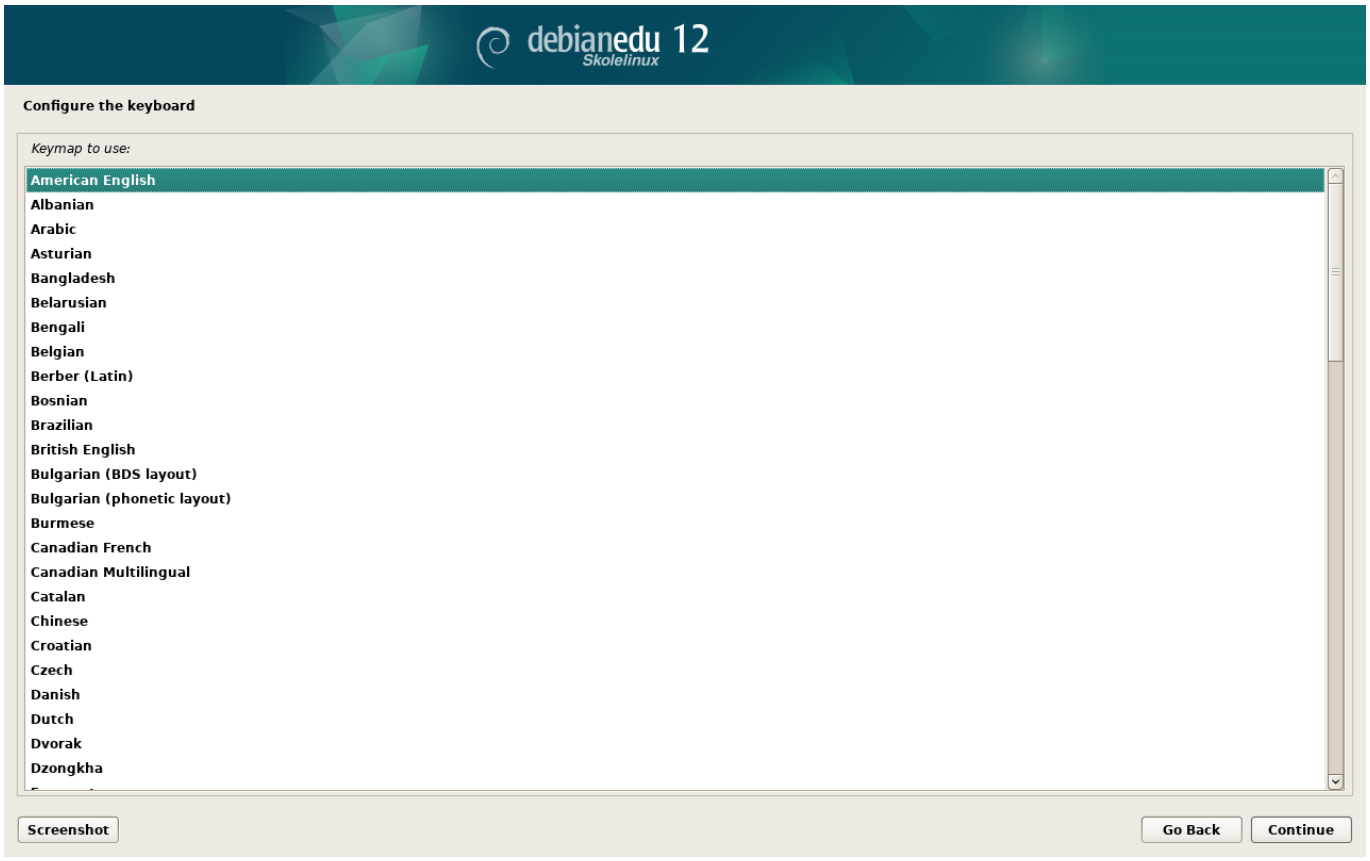
Teksttilstanden og den grafiske installation er funktionelt identisk - kun fremtoningen er forskellig. Den grafiske tilstand tilbyder muligheden for at bruge musen, og ser selvfølgelig pænere og mere moderne ud. Med mindre at udstyret har problemmer med den grafiske tilstand, så er der ingen grund til ikke at bruge den.

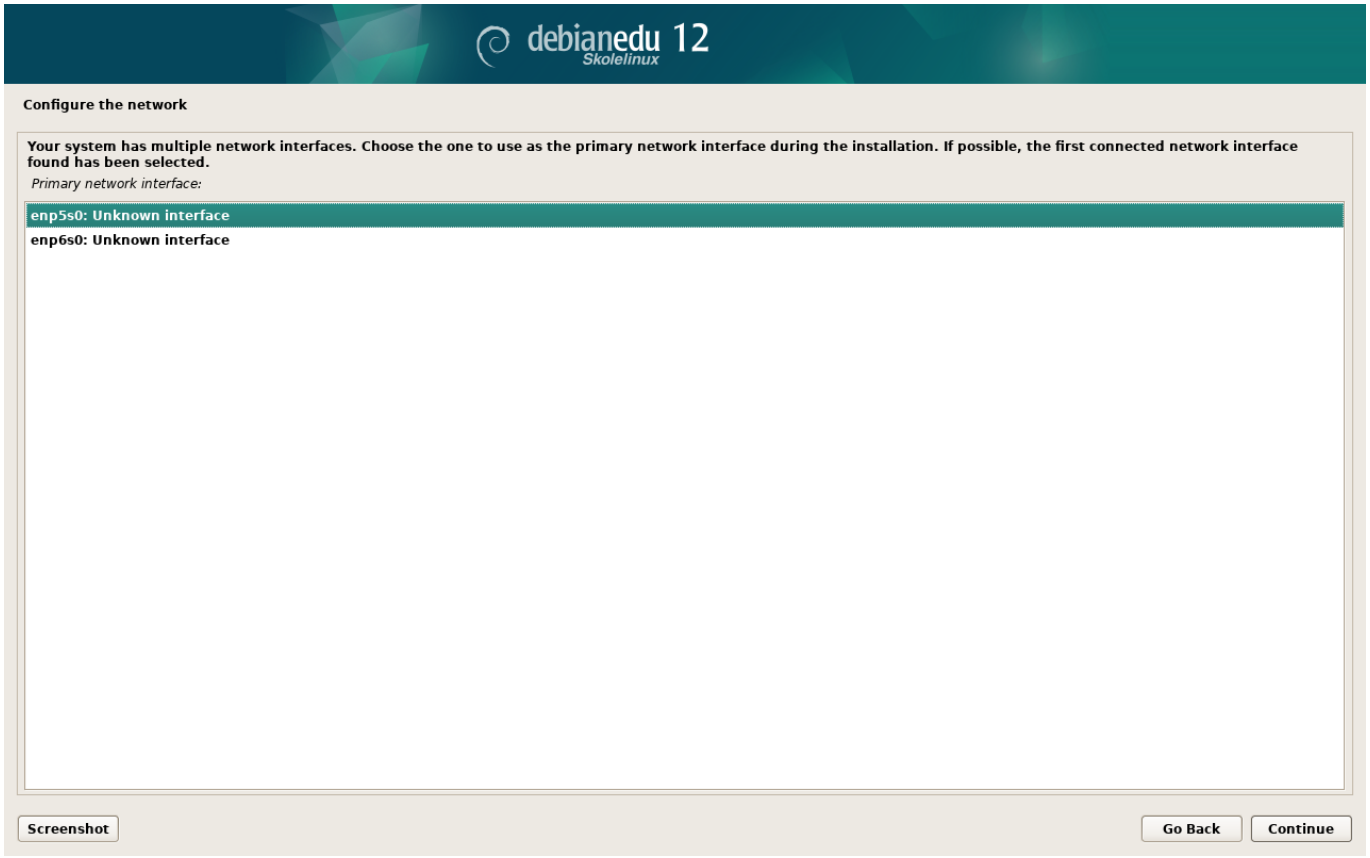
So here is a screenshot tour through a graphical 64-bit Main Server + Workstation + LTSP Server installation (in BIOS mode) and how it looks at the first boot of the main server and a PXE boot on the LTSP client network (thin client session screen - and login screen after the session on the right has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

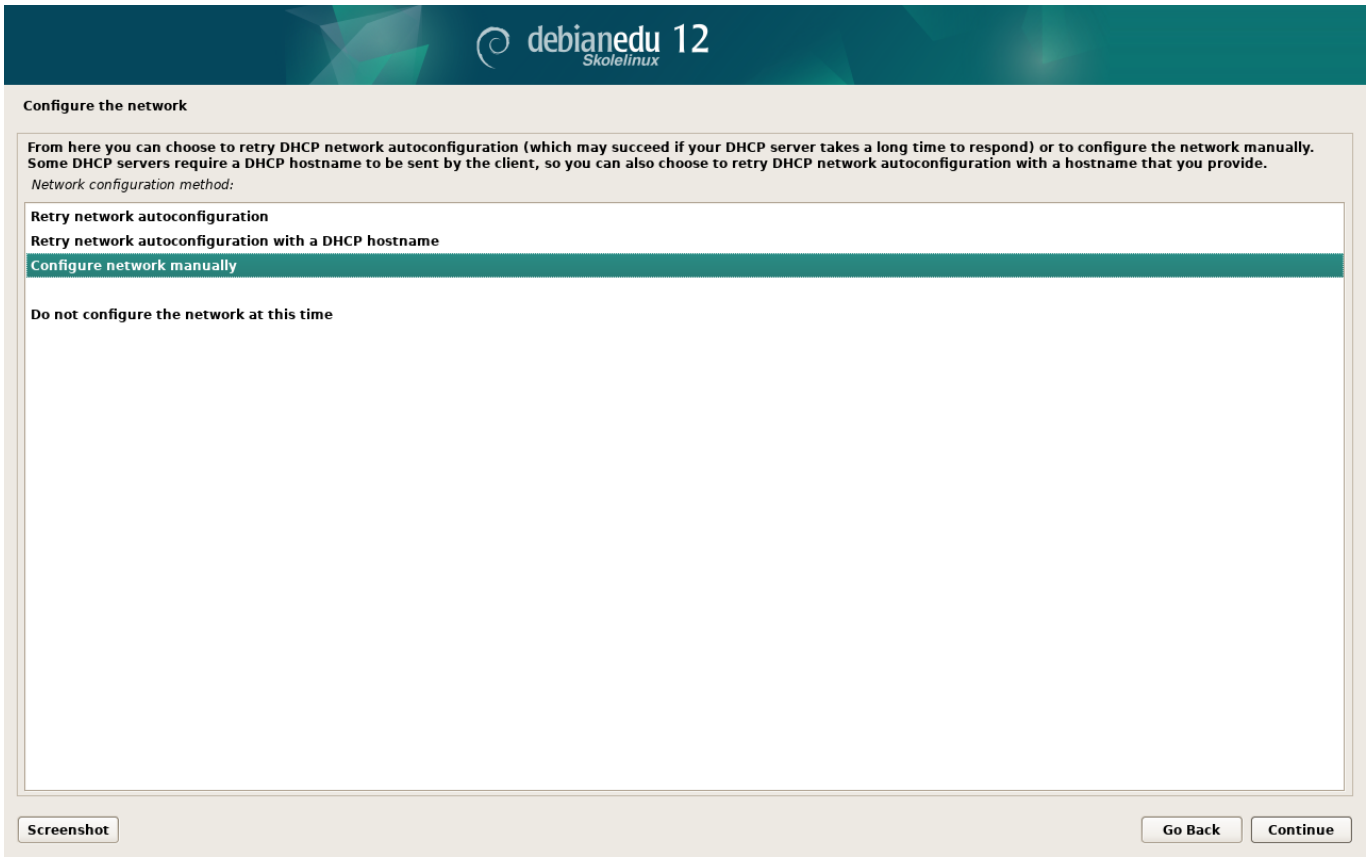


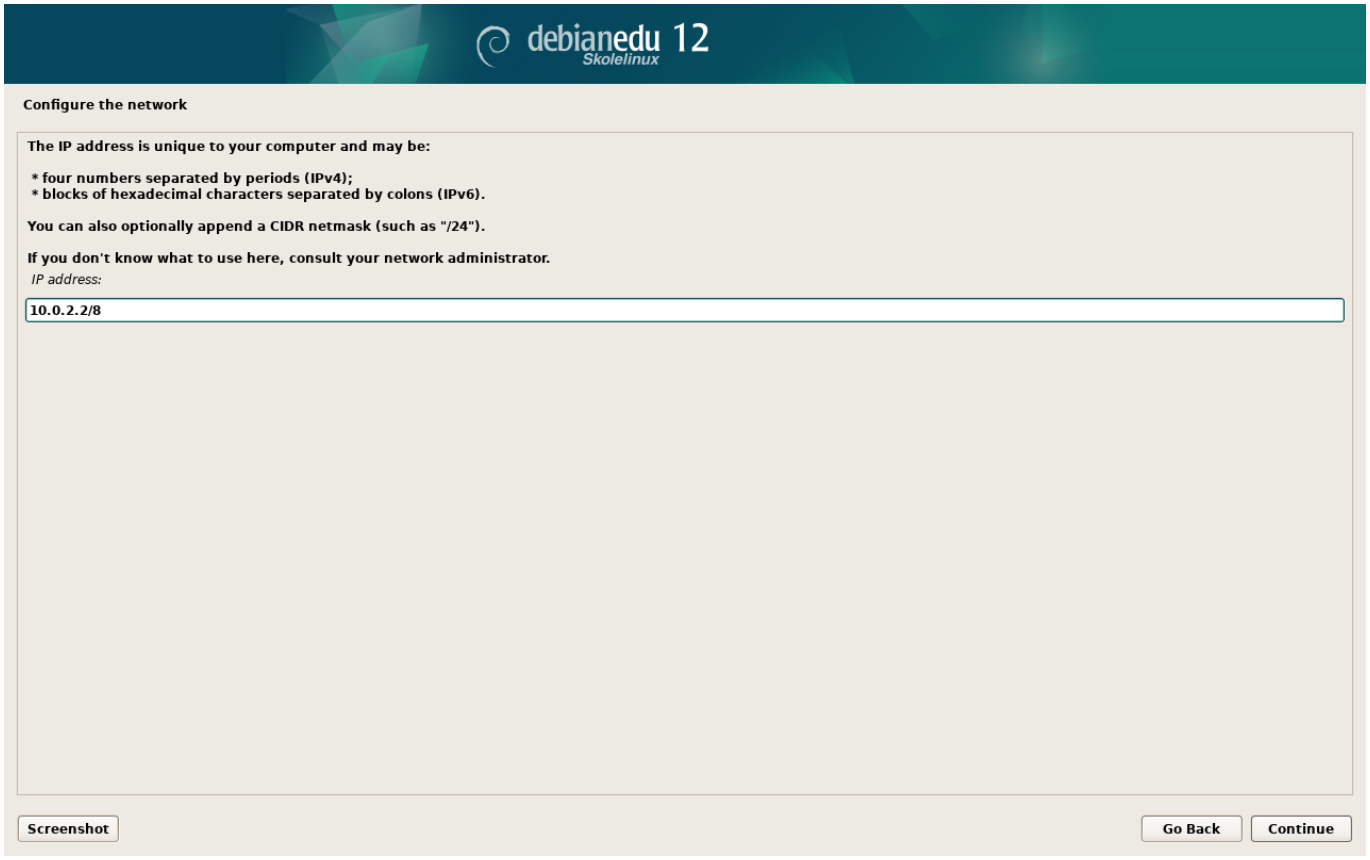

debianedu 12
Skolelinux
Select a language
Choose the language to be used for the installation process. The selected language will also be the default language for the installed system.
Language:
Bosnian - Bosanski
Bulgarian - Български
Burmese - မြန်မာစာ
Catalan - Català
Chinese (Simplified) - 中文(简体)
Chinese (Traditional) - 中文(繁體)
Croatian - Hrvatski
Czech - Čeština
Danish - Dansk
Dutch - Nederlands
Dzongkha - རྫོང་ཁ
English - English
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

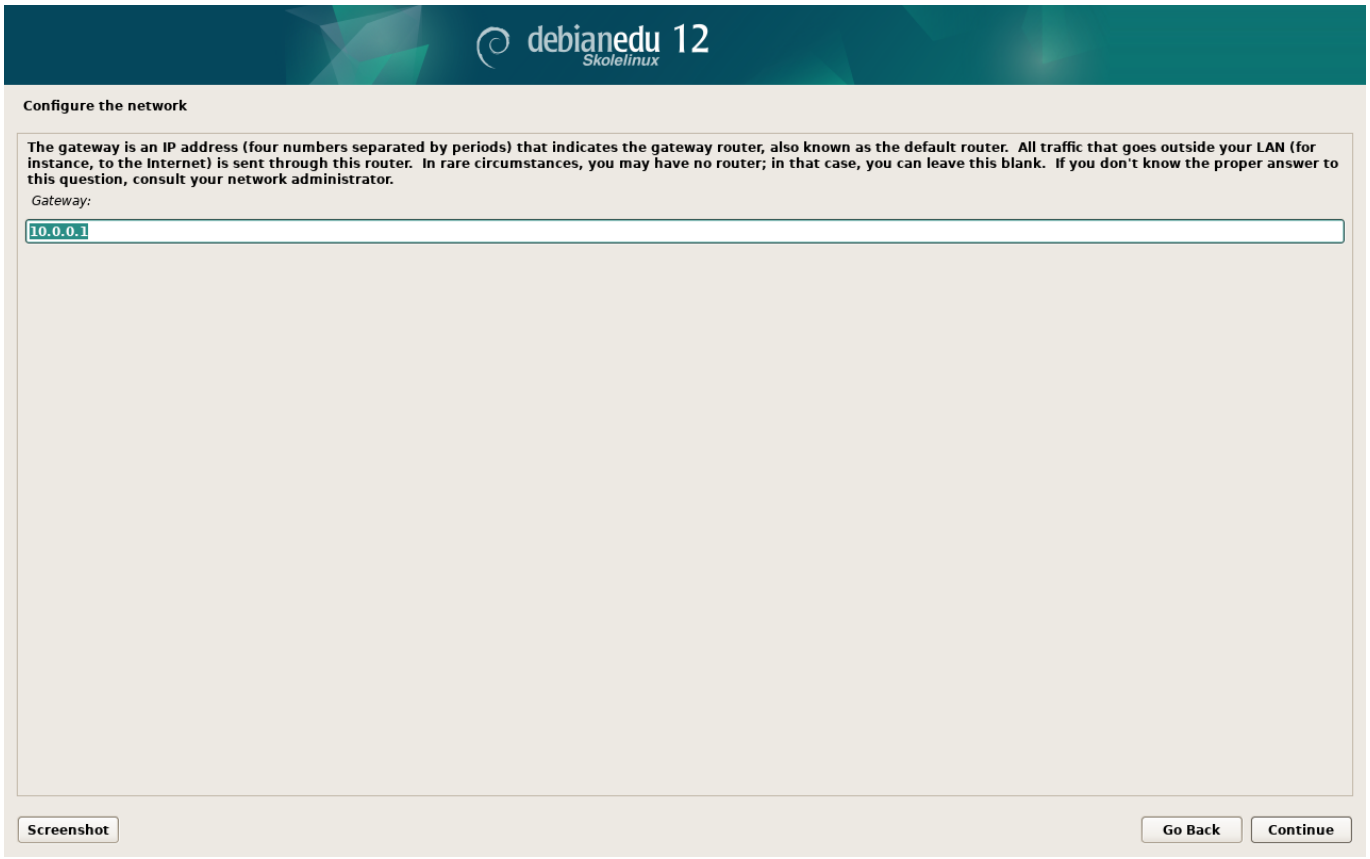

debianedu 12
Skolelinux
Select your location
The selected location will be used to set your time zone and also for example to help select the system locale. Normally this should be the country where you live.
This is a shortlist of locations based on the language you selected. Choose "other" if your 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

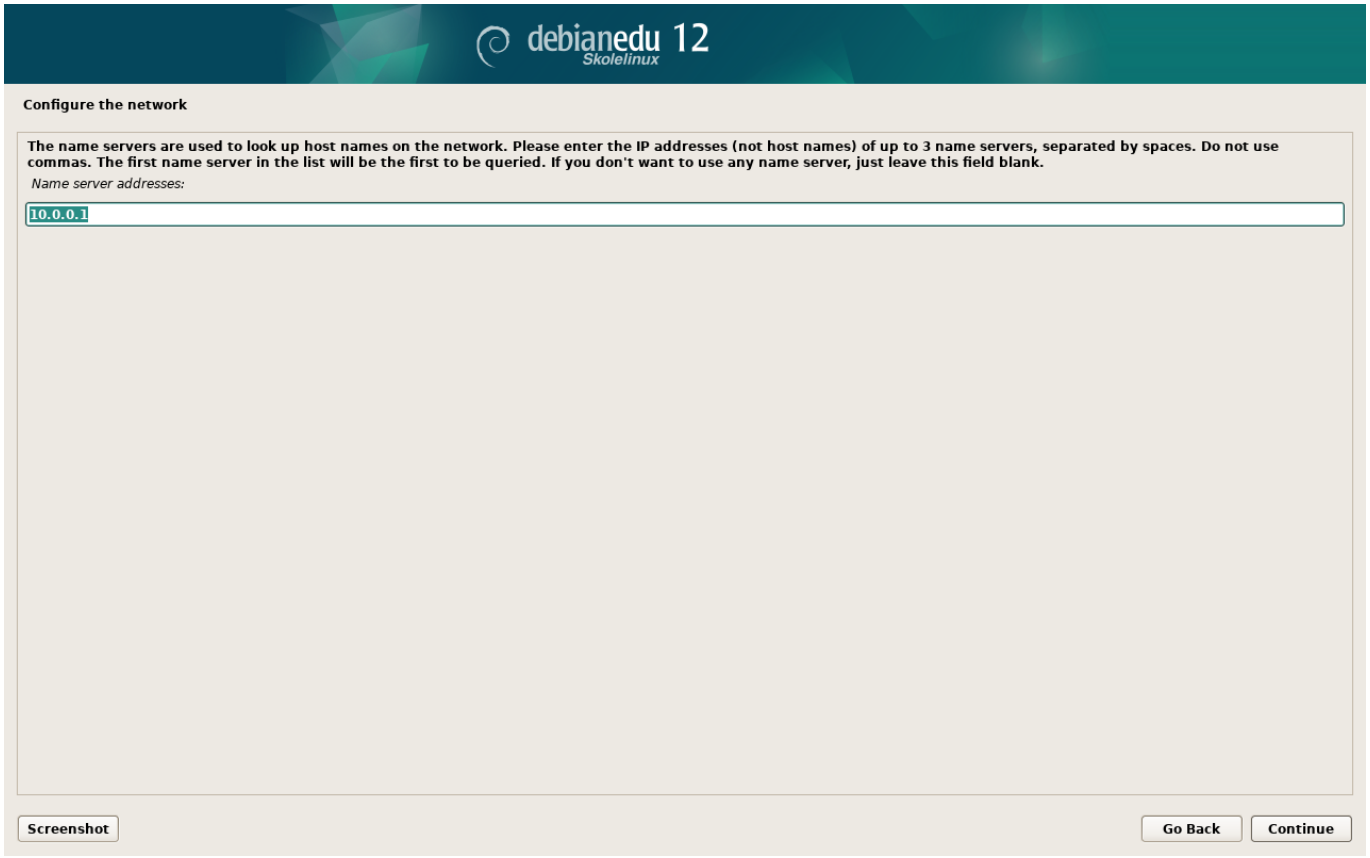

debianedu 12
Skolelinux
Configure the keyboard
Keymap to use:
American English
Albanian
Arabic
Asturian
Bangladesh
Belarusian
Bengali
Belgian
Berber (Latin)
Bosnian
Brazilian
British English
Bulgarian (BDS layout)
Bulgarian (phonetic layout)
Burmese
Canadian French
Canadian Multilingual
Catalan
Chinese
Croatian
Czech
Danish
Dutch
Dvorak
Dzongkha
Screenshot
Go Back
Continue

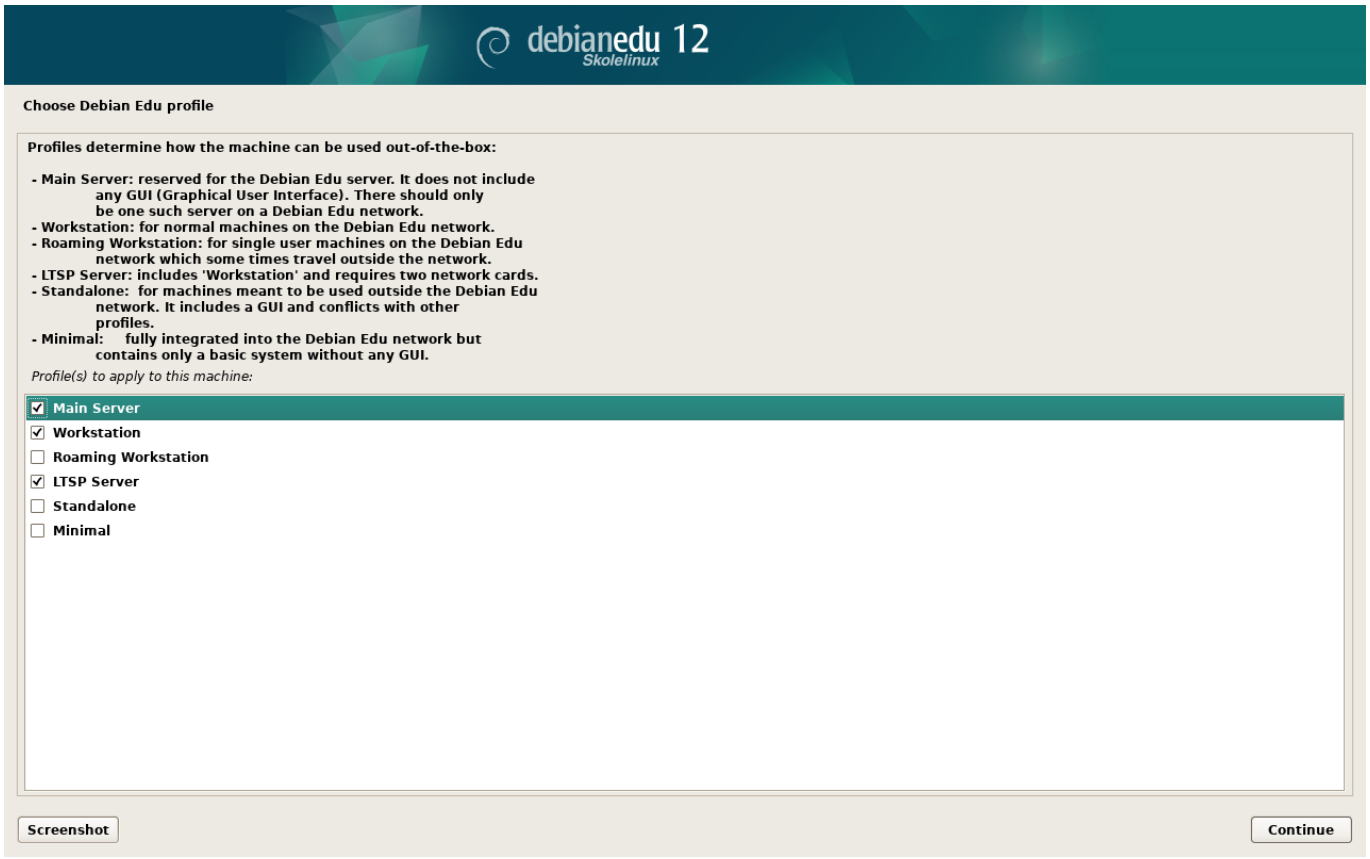

debianedu 12
Skolelinux
Configure the network
Your system has multiple network interfaces. Choose the one to use as the primary network interface during the installation. If possible, the first connected network interface found has been selected.
Primary network interface:
enp5s0: Unknown interface
enp6s0: Unknown interface
Screenshot
Go Back
Continue

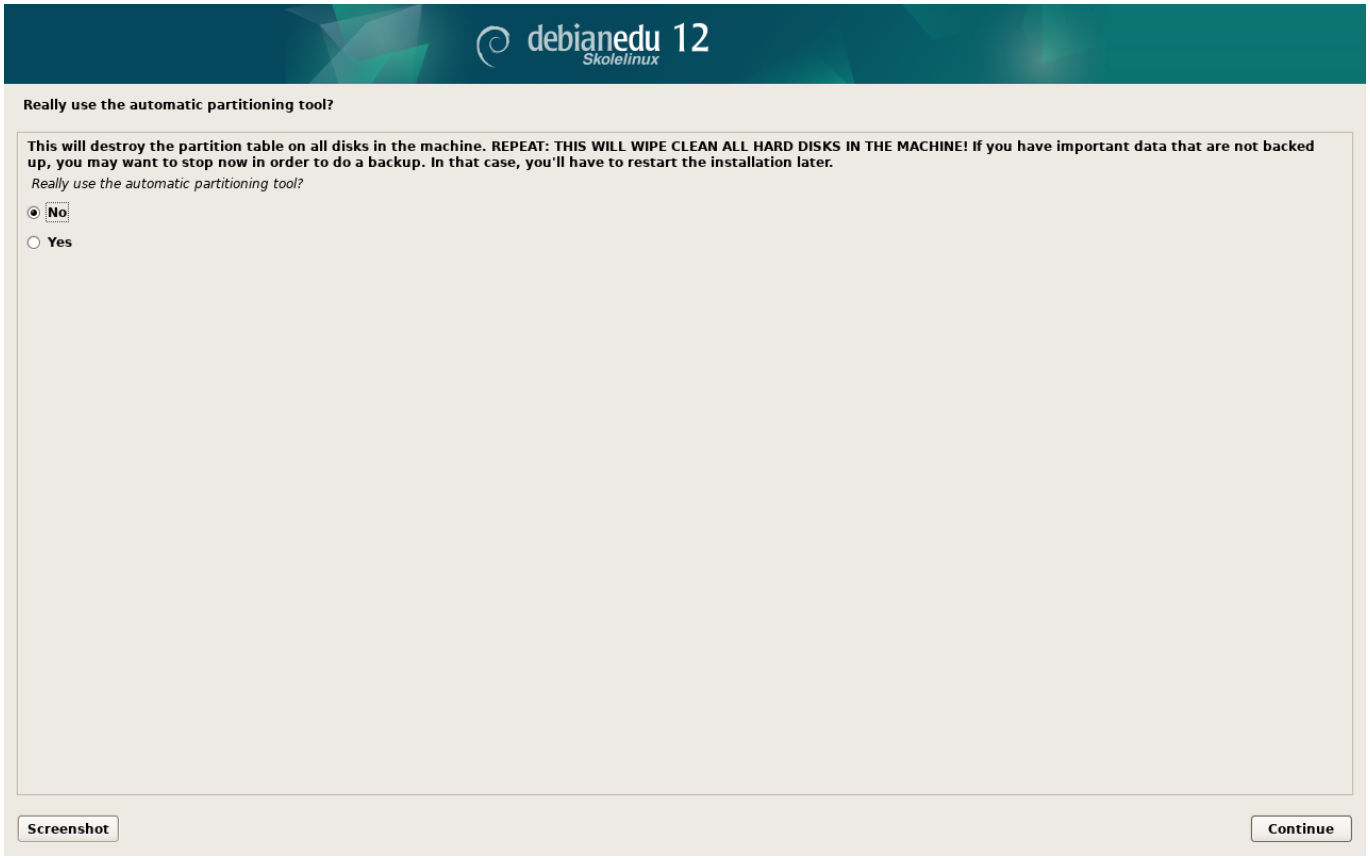

debianedu 12
Skolelinux
Configure the network
From here you can choose to retry DHCP network autoconfiguration (which may succeed if your DHCP server takes a long time to respond) or to configure the network manually. Some DHCP servers require a DHCP hostname to be sent by the client, so you can also 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 Back
Continue

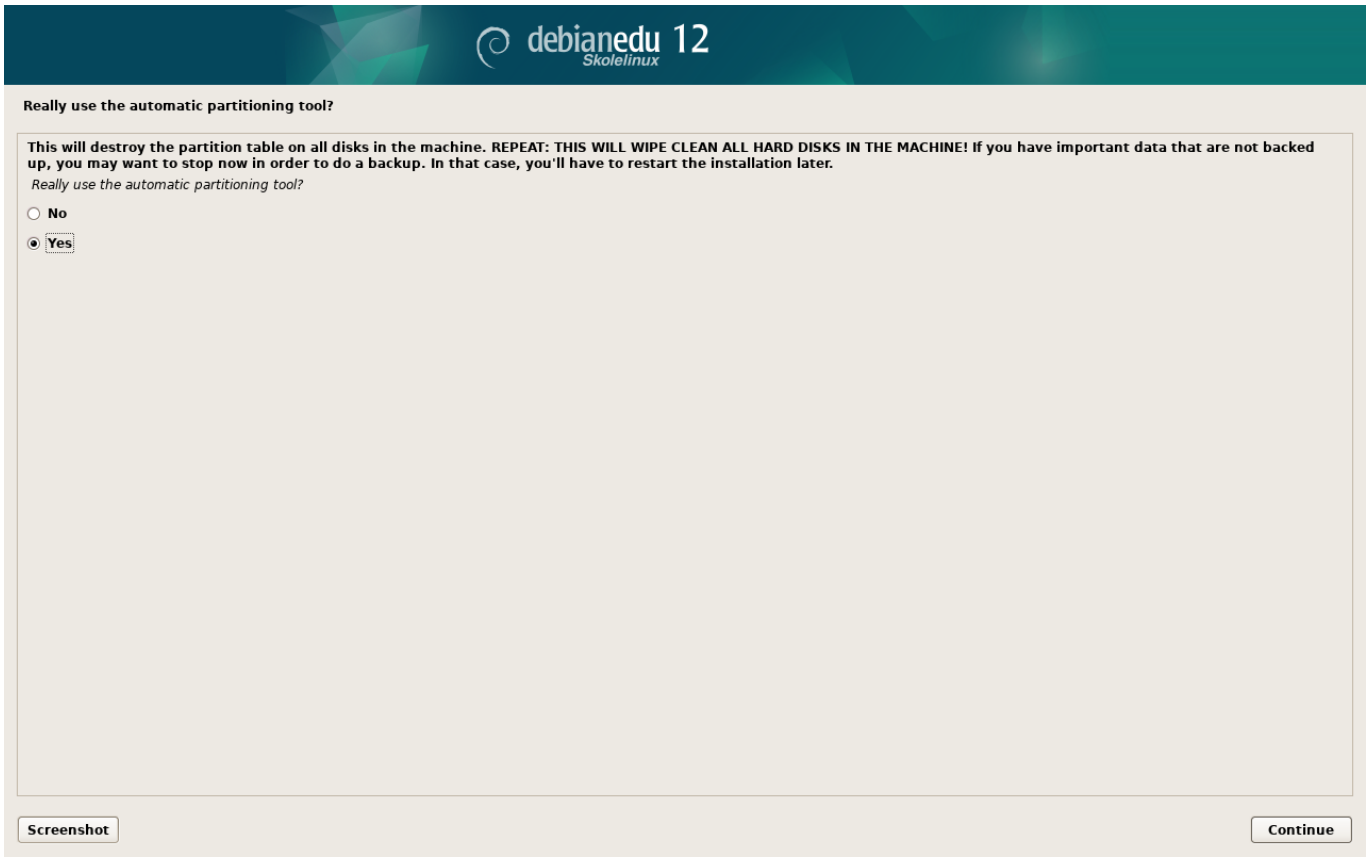

debianedu 12
Skolelinux
Configure the network
The IP address is unique to your computer and may be:
* four numbers separated by periods (IPv4);
* blocks of hexadecimal characters separated by colons (IPv6).
You can also optionally append a CIDR netmask (such as "/24").
If you don't know what to use here, consult your network administrator.
IP address:
10.0.2.2/8
Screenshot
Go Back
Continue

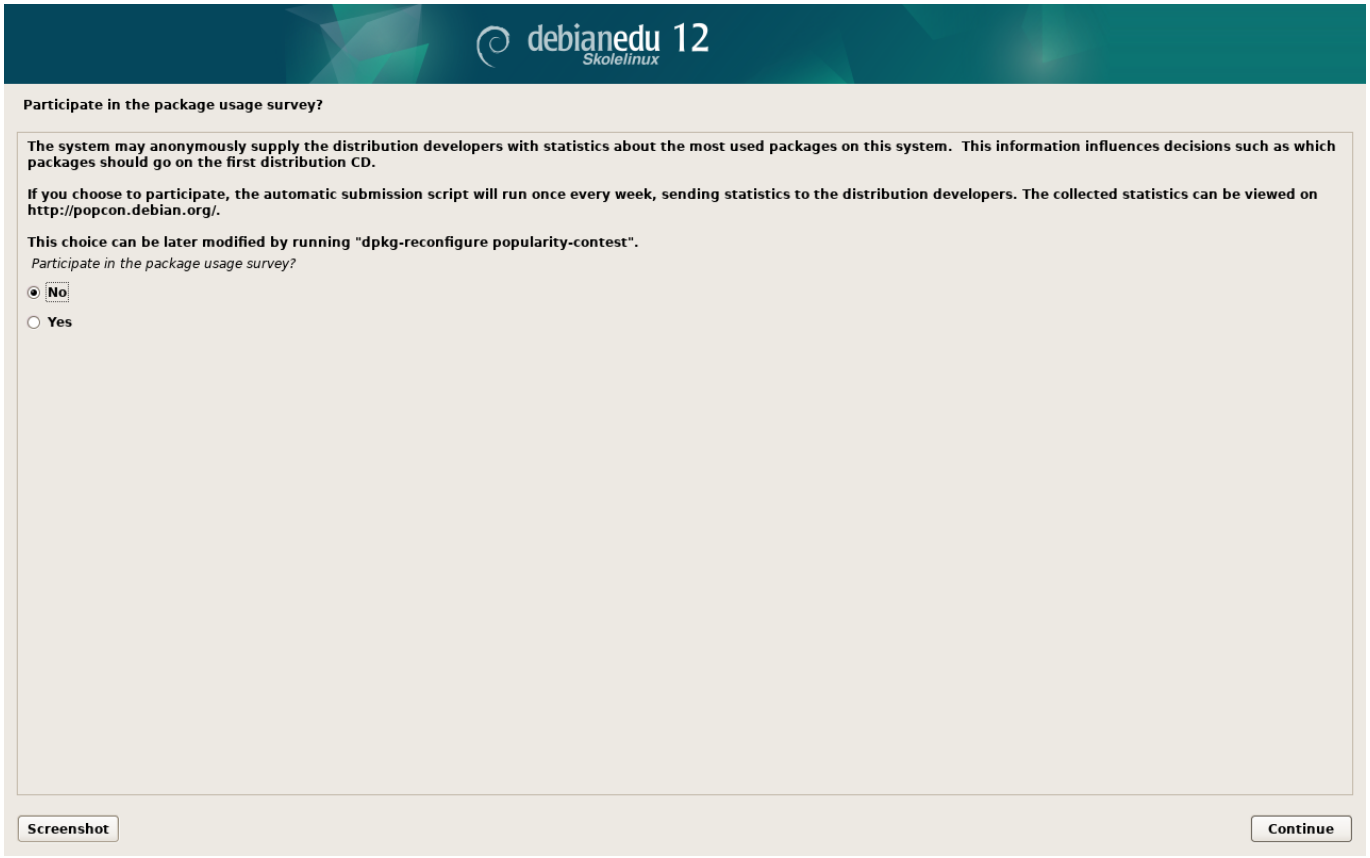

debianedu 12
Skolelinux
Configure the network
The gateway is an IP address (four numbers separated by periods) that indicates the gateway router, also known as the default router. All traffic that goes outside your LAN (for instance, to the Internet) is sent through this router. In rare circumstances, 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:
10.0.0.1
Screenshot
Go Back
Continue

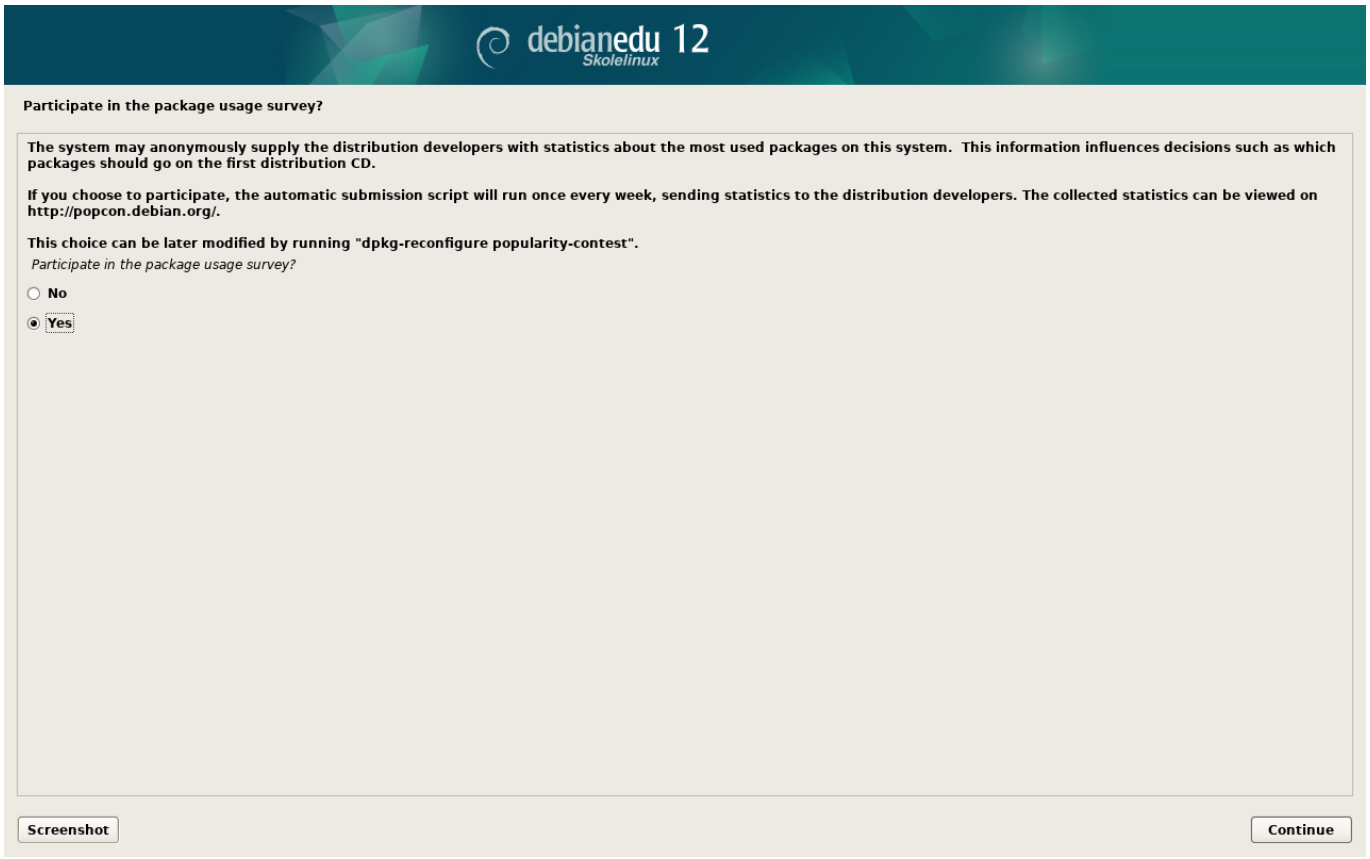

debianedu 12
Skolelinux
Configure the network
The name servers are used to look up host names on the network. Please enter the IP addresses (not host names) of up to 3 name servers, separated by spaces. Do not use commas. The first name server in the list will be the first to be queried. If you don't want to use any name server, just leave this field blank.
Name server addresses:
10.0.0.1
Screenshot
Go Back
Continue

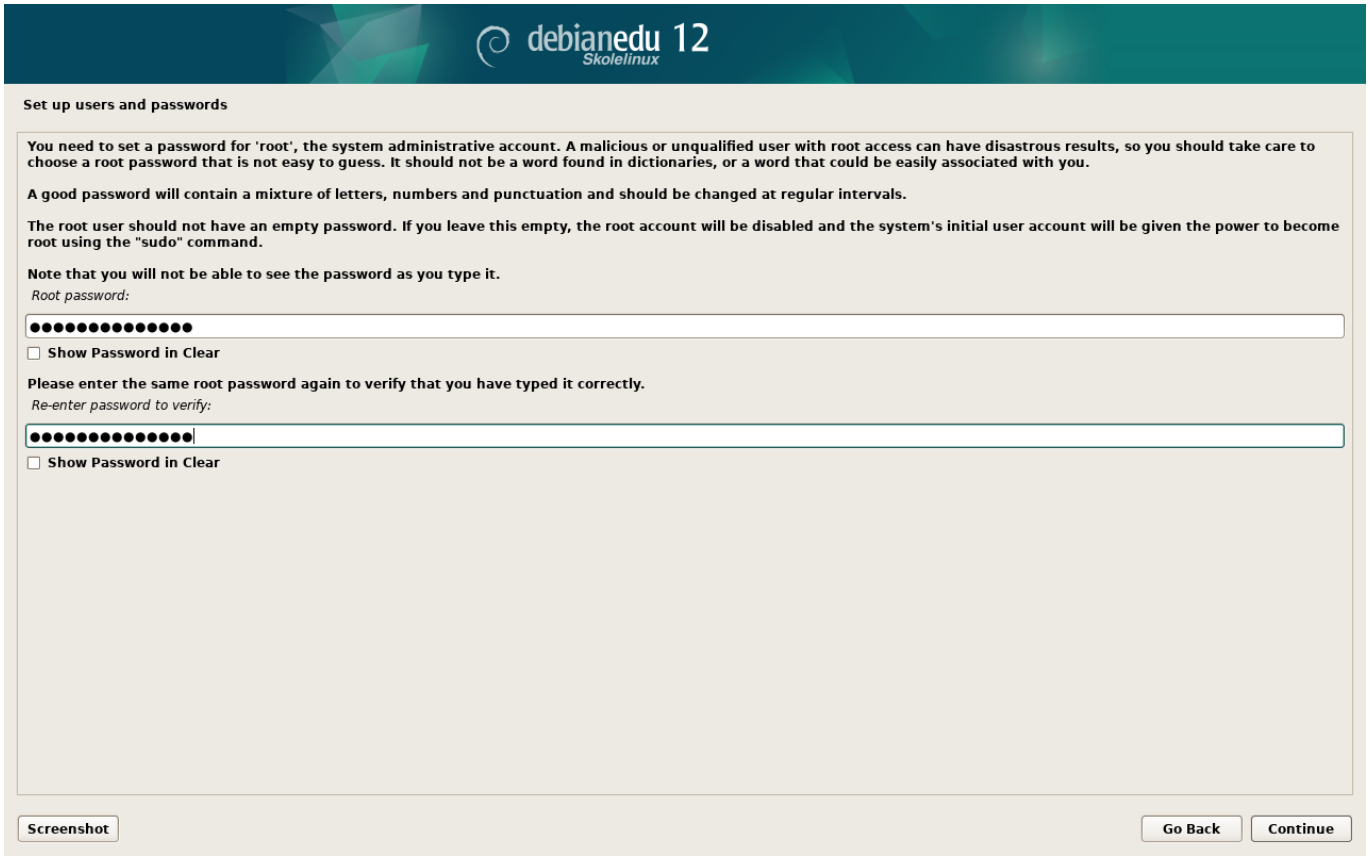

debianedu 12
Skolelinux
Choose Debian Edu profile
Profiles determine how the machine can be used out-of-the-box:
- Main Server: reserved for the Debian Edu server. It does not include any GUI (Graphical User Interface). There should only be one such server on a Debian Edu network.
- Workstation: for 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

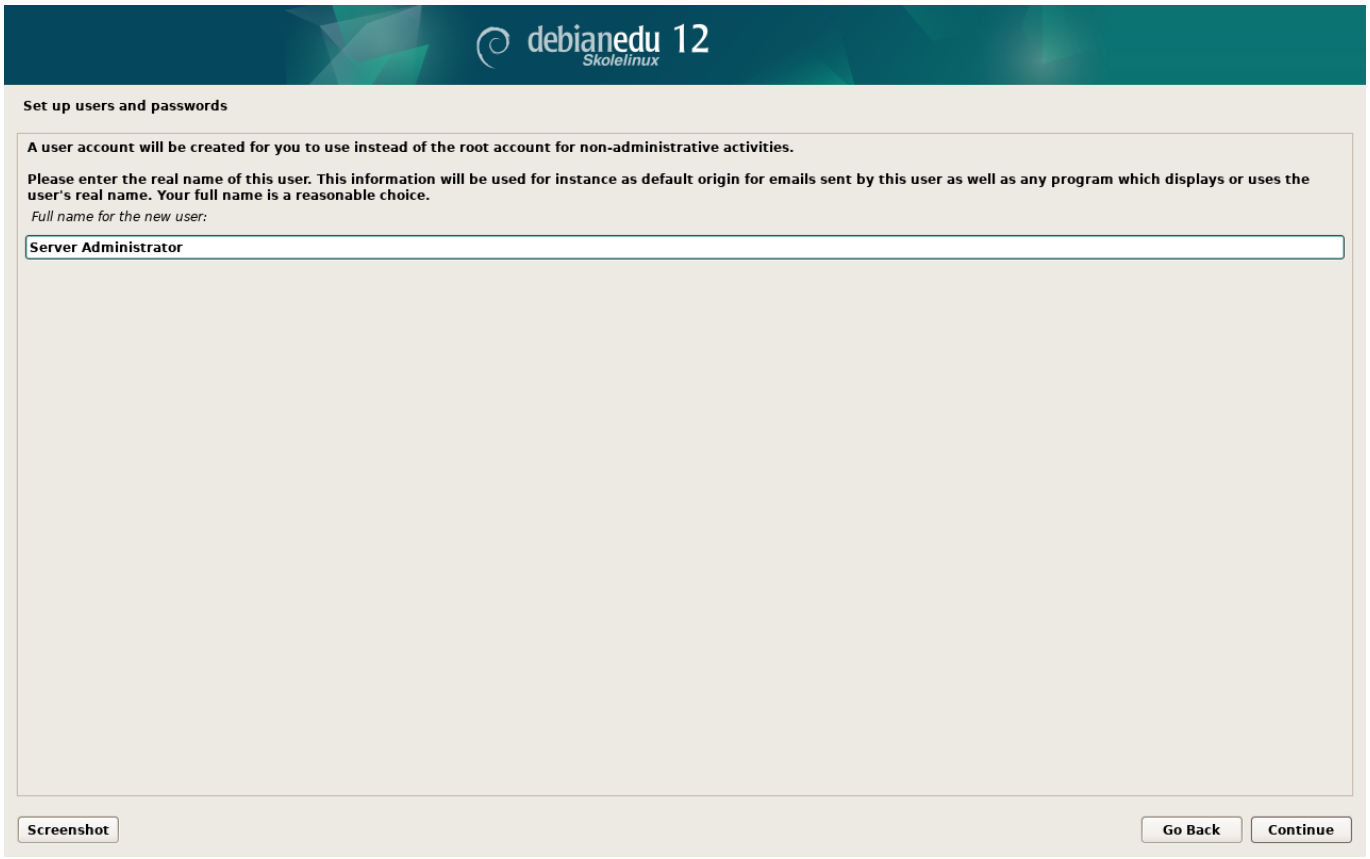

debianedu 12
Skolelinux
Really use the automatic partitioning tool?
This will destroy the partition table on all disks in the machine. REPEAT: THIS WILL WIPE CLEAN ALL HARD DISKS IN THE MACHINE! If you have important data that are not backed up, you may want to stop now in order to do a backup. In that case, you'll have to restart the installation later.
Really use the automatic partitioning tool?
No
Yes
Screenshot
Continue

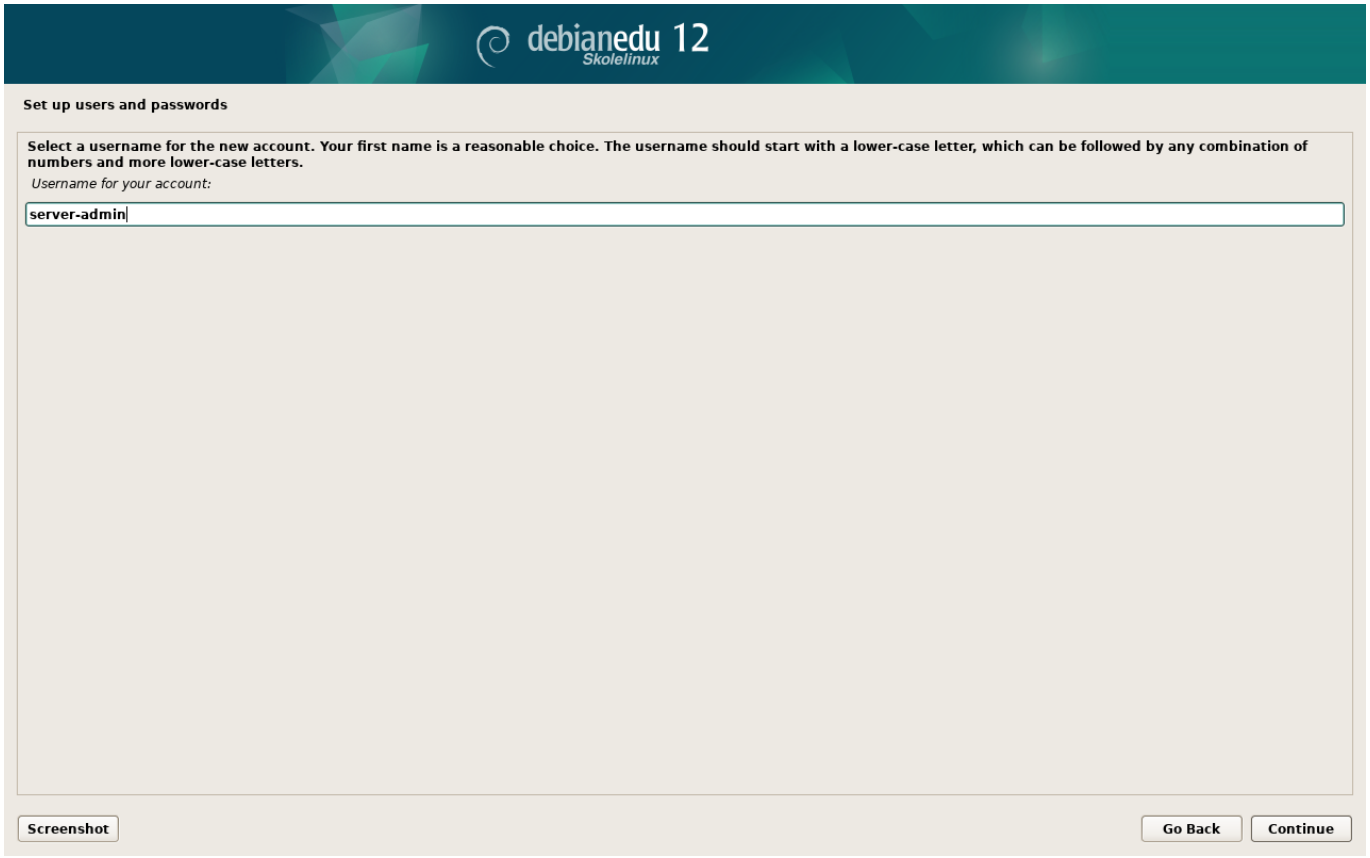

debianedu 12
Skolelinux
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Really use the automatic partitioning tool?
No
Yes
Screenshot
Continue

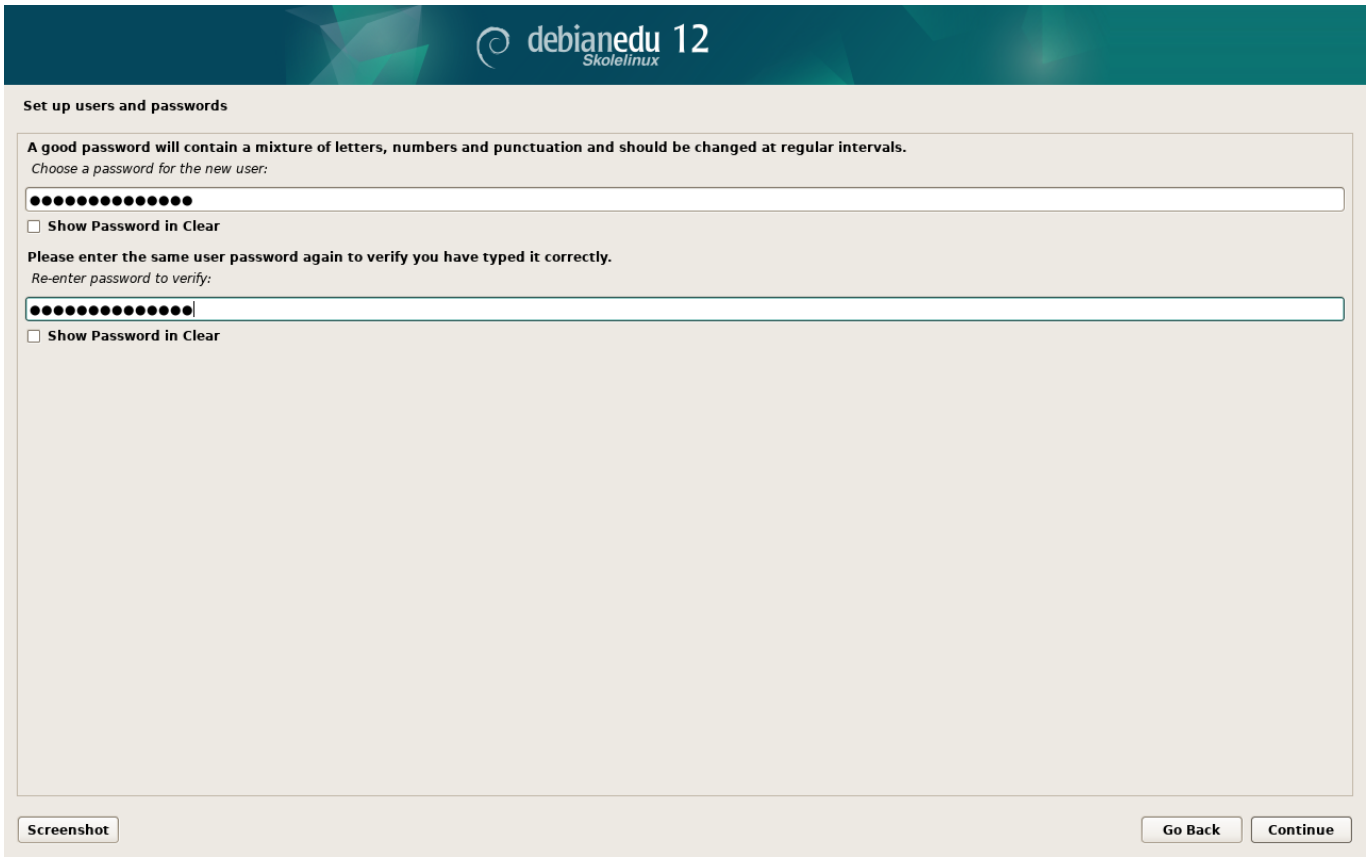

debianedu 12
Skolelinux
Participate in the package usage survey?
The system may anonymously supply the distribution developers with statistics about the most used packages on this system. This information influences decisions such as which packages should go on the first distribution CD.
If you choose 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
Screenshot
Continue

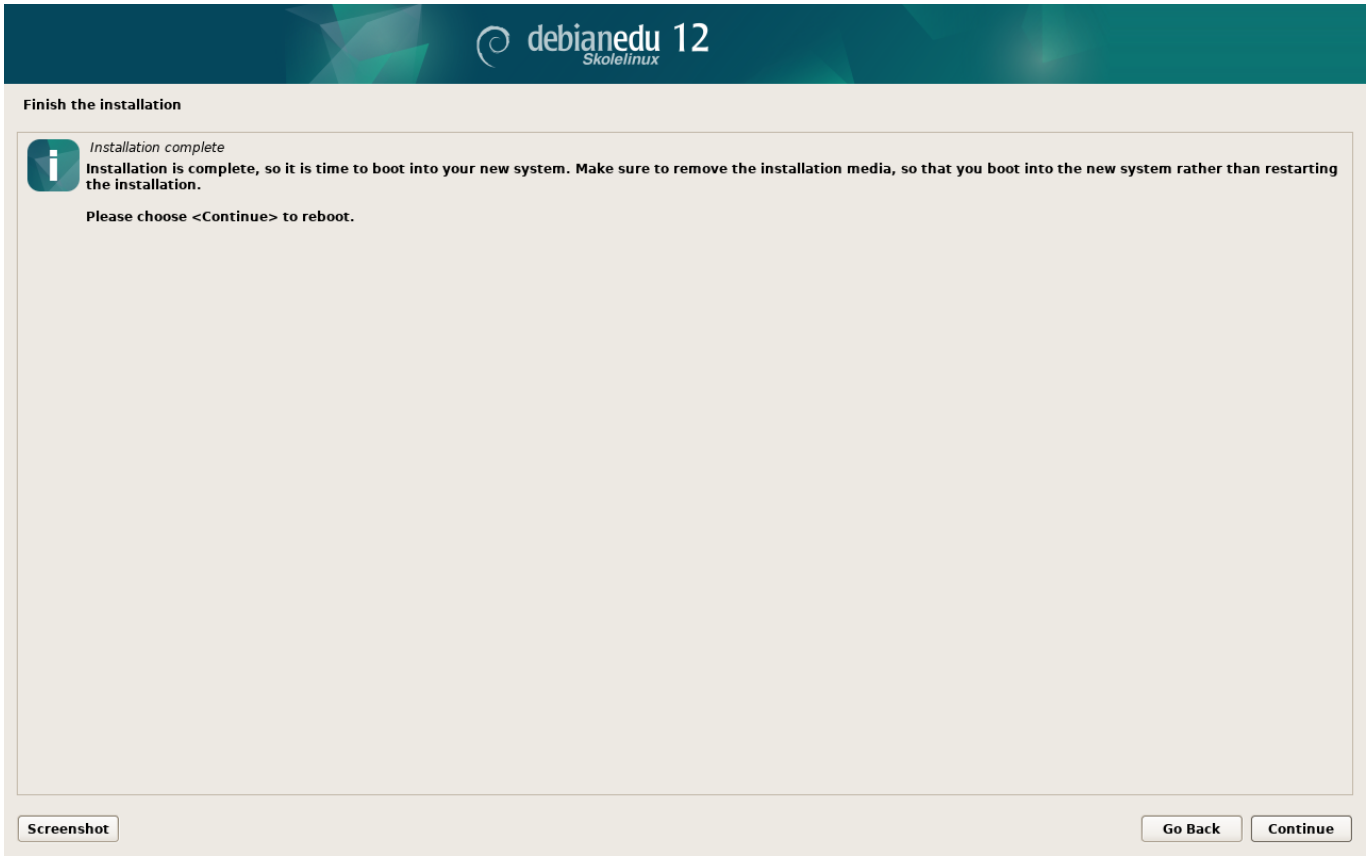

debianedu 12
Skolelinux
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If you choose to participate, the automatic submission script will run once every week, sending statistics to the distribution developers. The collected statistics can be viewed on http://popcon.debian.org/.
This choice can be later modified by running "dpkg-reconfigure popularity-contest".
Participate in the package usage survey?
No
Yes
Screenshot
Continue

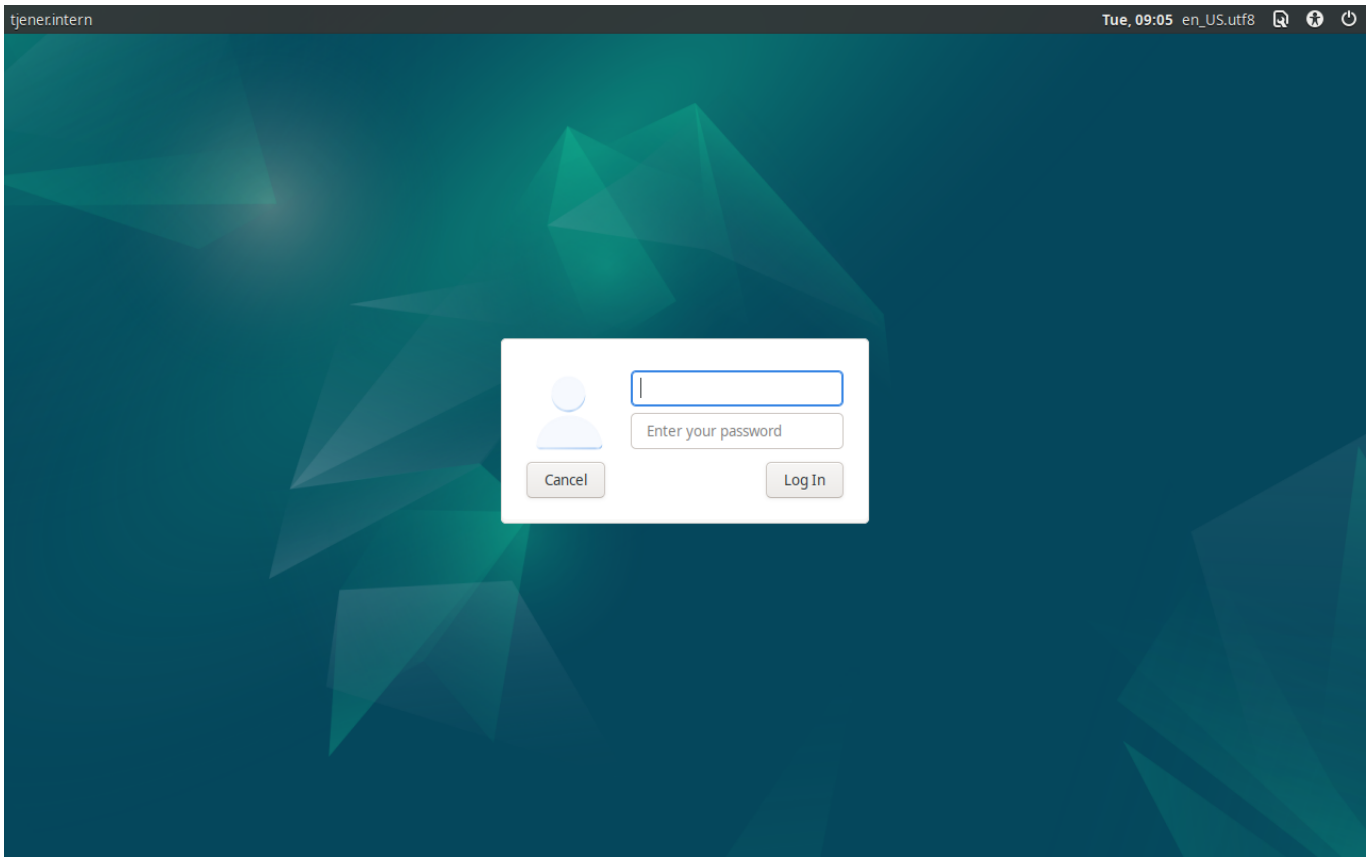

debianedu 12
Skolelinux
Set up users and passwords
You need to set a password for 'root', the system administrative account. A malicious or unqualified user with root access can have disastrous results, so you should take care to choose a root password that is not easy to guess. It should not be a word 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
Screenshot
Go Back
Continue

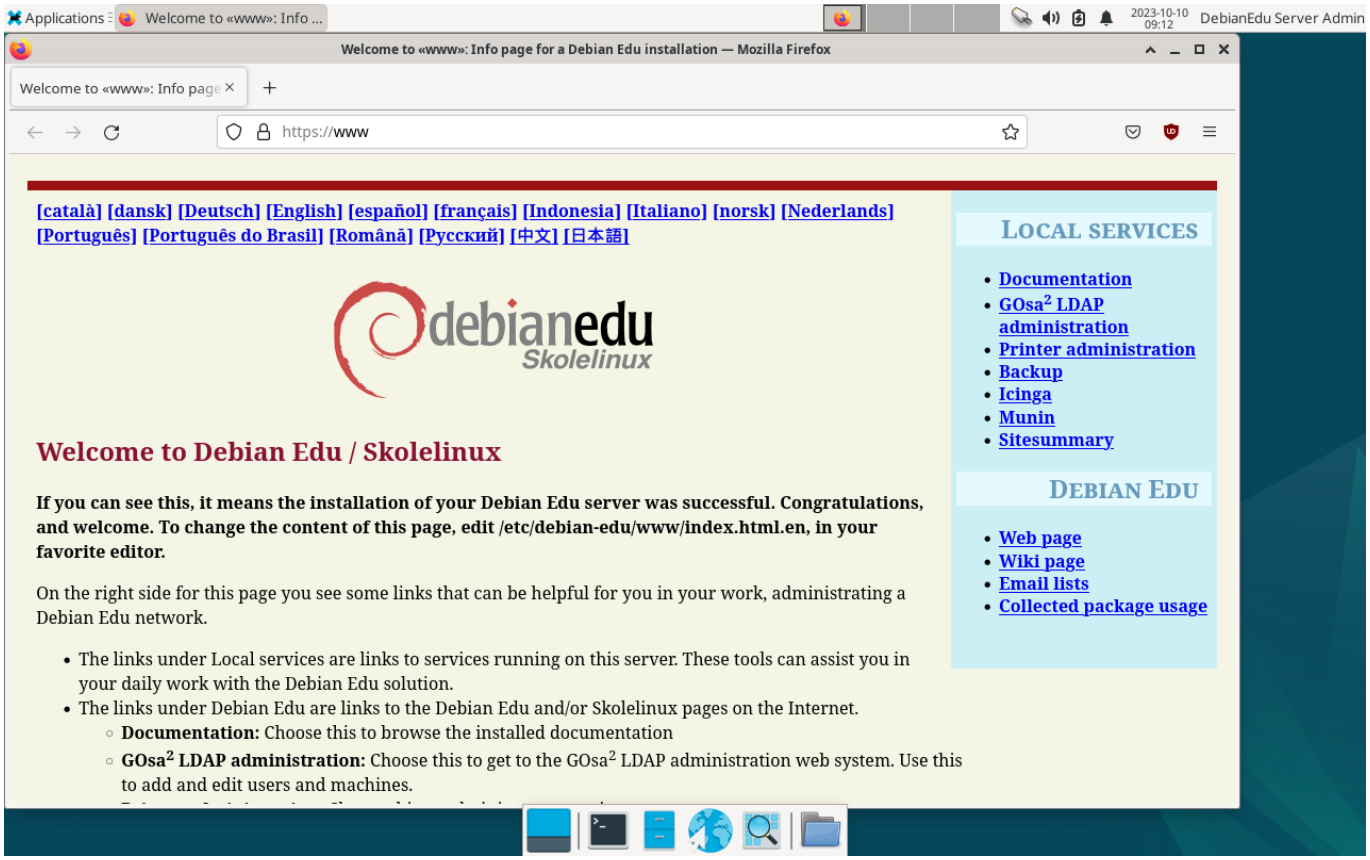

debianedu 12
Skolelinux
Set up users and passwords
A user account will be created for you to use instead of the root account for non-administrative activities.
Please enter the real name of this user. This information will be used for instance as default origin for emails sent by this user as well as any program which displays or uses the user's real name. Your full name is a reasonable choice.
Full name for the new user:
Server Administrator
Screenshot
Go Back
Continue

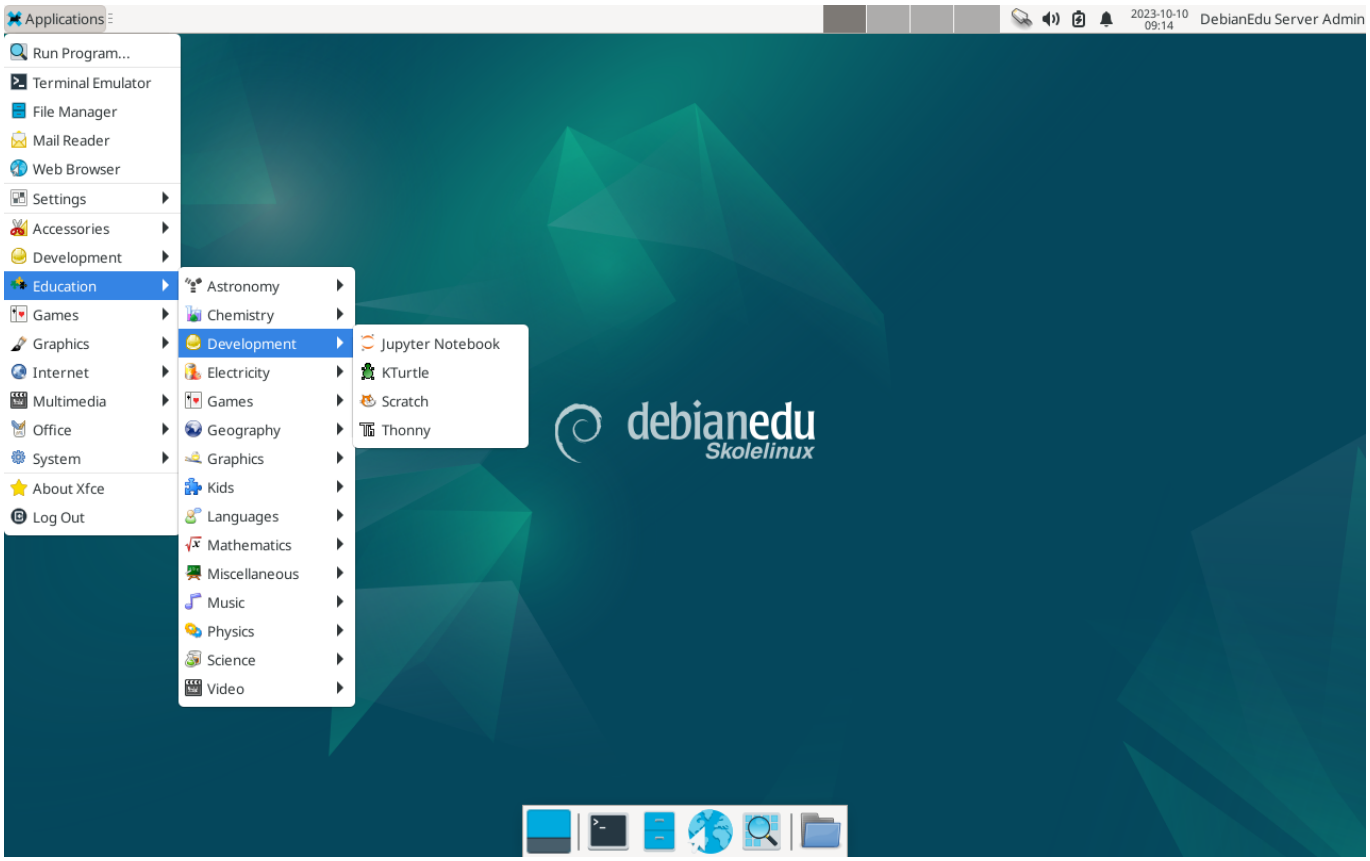

debianedu 12
Skolelinux
Set up users and passwords
Select a username for the new account. Your first name is a reasonable choice. The username should start with a lower-case letter, which can be followed by any combination of numbers and more lower-case letters.
Username for your account:
server-admin
Screenshot
Go Back
Continue

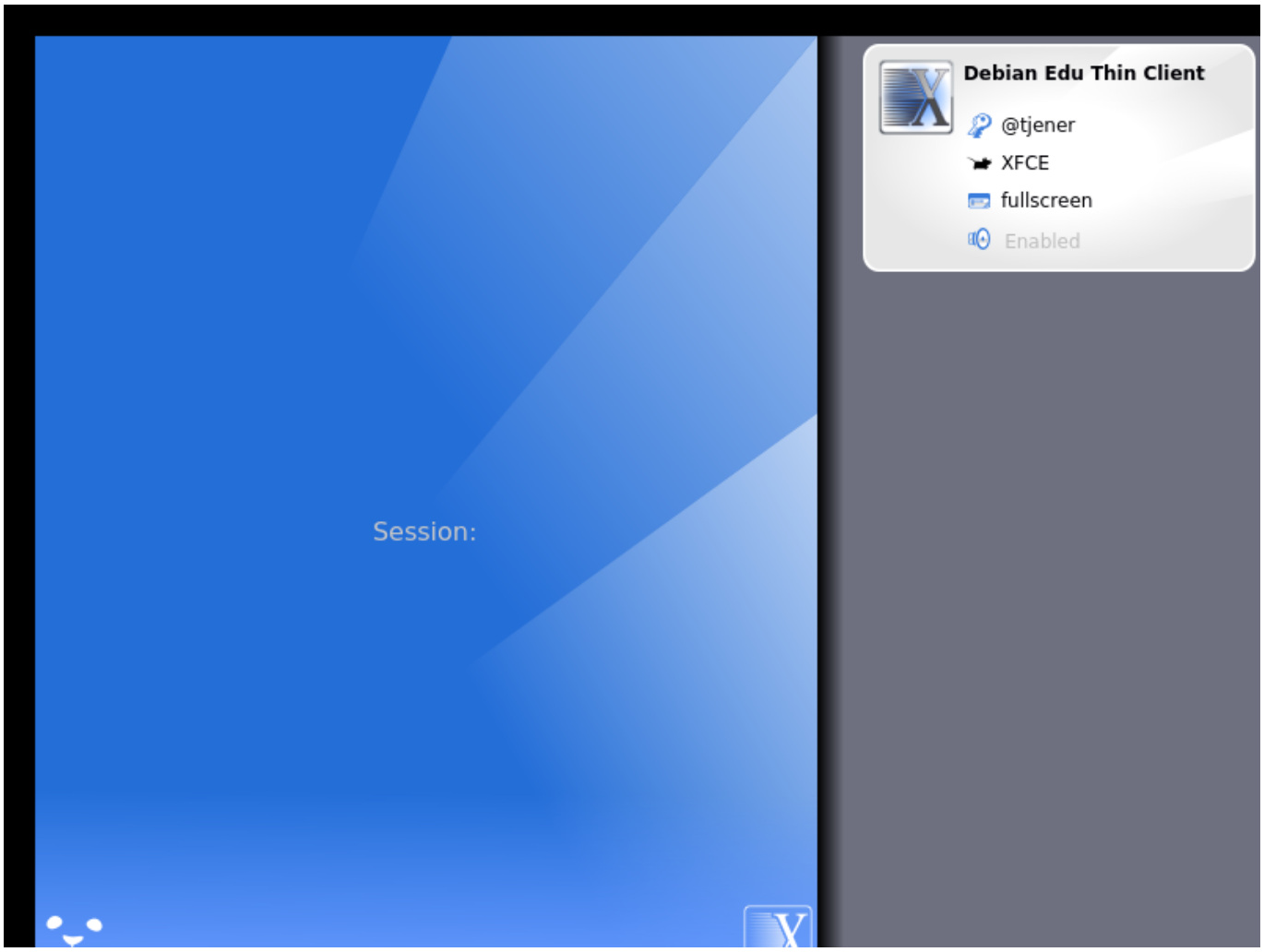

debianedu 12
Skolelinux
Set up users and passwords
A good password will contain a mixture of letters, numbers and punctuation and should be changed at regular intervals.
Choose a password for the new user:
Show Password in Clear
Please enter the same user password again to verify you have typed it correctly.
Re-enter password to verify:
Show Password in Clear
Screenshot
Go Back
Continue

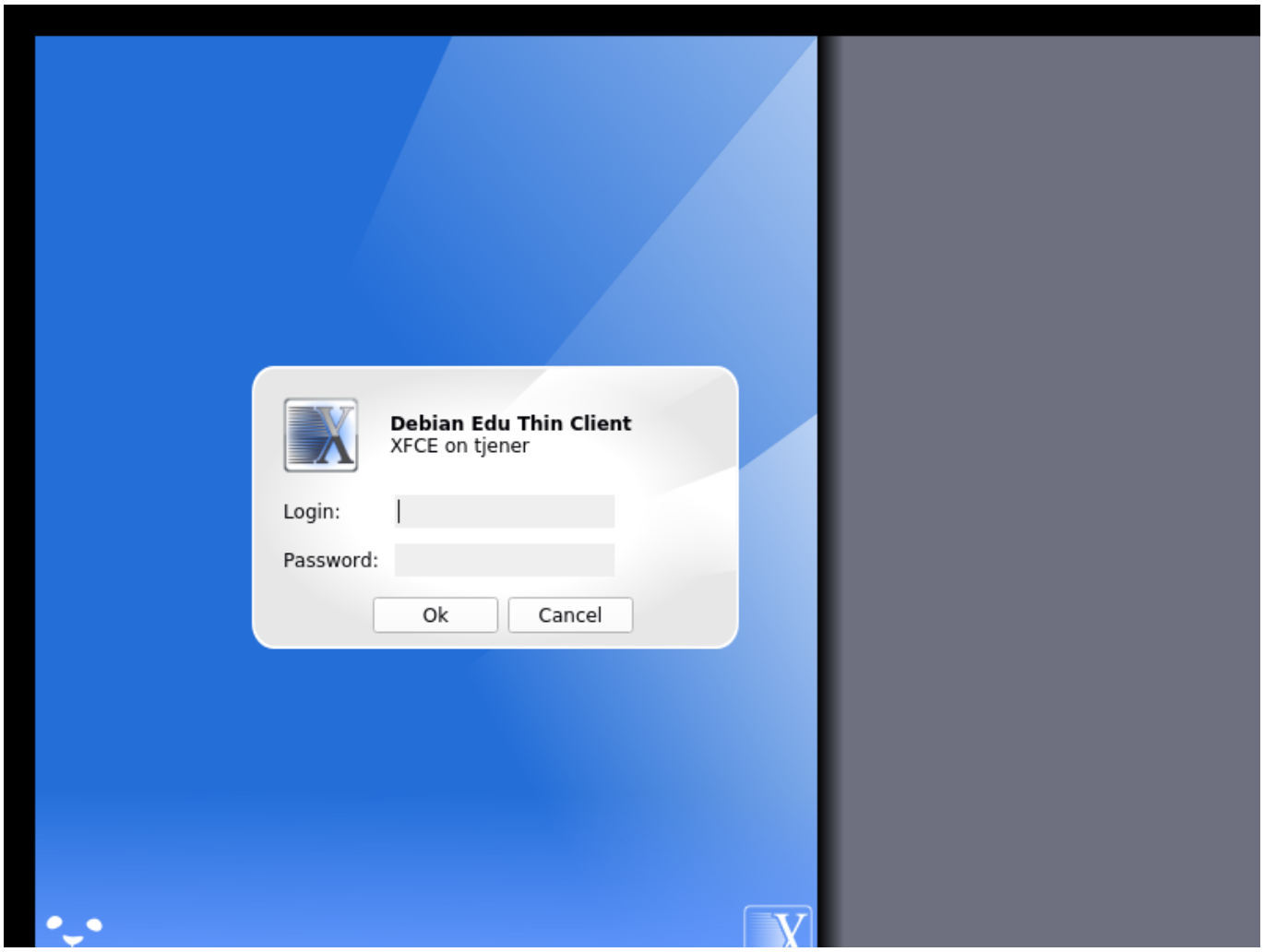

debianedu 12
Skolelinux
Finish the installation
Installation complete
Installation is complete, so it is time to boot into your new system. Make sure to remove the installation media, so that you boot into the new system rather than restarting the installation.
Please choose <Continue> to reboot.
Screenshot
Go Back
Continue


tjener.intern
Tue, 09:05 en_US.utf8
Enter your password
Cancel
Log In


Applications
Welcome to «www»: Info ...
2023-10-10 09:12
DebianEdu Server Admin
Welcome to «www»: Info page for a Debian Edu installation — Mozilla Firefox
Welcome to «www»: Info page
https://www
[català] [dansk] [Deutsch] [English] [español] [français] [Indonesia] [Italiano] [norsk] [Nederlands] [Português] [Português do Brasil] [Română] [Русский] [中文] [日本語]
debianedu Skolelinux
Welcome to Debian Edu / Skolelinux
If you can see this, it means the installation of your Debian Edu server was successful. Congratulations, and welcome. To change the content of this page, edit /etc/debian-edu/www/index.html.en, in your favorite editor.
On the right side for this page you see some links that can be helpful for you in your work, administrating a Debian Edu network.
The links under Local services are links to services running on this server. These tools can assist you in your daily work with the Debian Edu solution.
The links under Debian Edu are links to the Debian Edu and/or Skolelinux pages on the Internet.
Documentation: Choose this to browse the installed documentation
GOsa² LDAP administration: Choose this to get to the GOsa² LDAP administration web system. Use this to add and edit users and machines.
LOCAL SERVICES
Documentation
GOsa² LDAP administration
Printer administration
Backup
Icinga
Munin
Sitesummary
DEBIAN EDU
Web page
Wiki page
Email lists
Collected package usage


Applications
2023-10-10
09:14
DebianEdu Server Admin
Run Program...
Terminal Emulator
File Manager
Mail Reader
Web Browser
Settings
Accessories
Development
Education
Games
Graphics
Internet
Multimedia
Office
System
About Xfce
Log Out
Astronomy
Chemistry
Development
Electricity
Games
Geography
Graphics
Kids
Languages
Mathematics
Miscellaneous
Music
Physics
Science
Video
Jupyter Notebook
KTurtle
Scratch
Thonny
debianedu
Skolelinux


Debian Edu Thin Client
@tjener
XFCE
fullscreen
Enabled
Session:



7 Kom i gang

7.1 Minimumstrin for at 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 informationen om konfiguration af Debian Edu-specifik filsystemadgang før tilføjelse af brugere; juster til din sidens politik hvis krævet.

Efter installationen er den første ting, du skal udføre, som første bruger:

1. Log ind på serveren.
2. Tilføj brugere med GOsa².
3. Add workstations with GOsa².

Tilføjelse af brugere og arbejdsstationer er beskrevet i detaljer nedenfor, så læs venligst dette kapitel helt færdigt. Det dækker hvordan minimumstrinene udføres korrekt samt andre oplysninger som alle sikkert har brug for.

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.

 Hvis generisk DNS-trafik blokeres fra netværket og du skal bruge en specifik DNS-server til at slå internetværter op, så skal du fortælle DNS-serveren, at den skal bruge denne server som sin »forwarder«. Opdater /etc/bind/named.conf.options og specificer IP-adressen for den benyttede DNS-server.

Kapitlet Hjælp dækker flere fif og ideer og nogle ofte stillede spørgsmål.

7.1.1 Tjenester der kører på hovedserveren

Der er flere tjenester kørende på hovedserveren, som kan håndteres via en håndteringsgrænseflade for nettet. Vi beskriver hver tjeneste nedenfor.

7.2 Introduktion til GOsa²

GOsa² er et internetbaseret håndteringsværktøj, som hjælper med at håndtere nogle vigtige dele af din opsætning for Debian Edu. Med GOsa² kan du håndtere (tilføje, ændre eller slette) disse hovedgrupper:

- Brugeradministration
- Gruppeadministration
- NIS Netgroup Administration
- Maskineadministration
- DNS-administration
- DHCP-administration

For GOsa² access you need the Skolelinux main server and a (client) system with a web browser installed which can be the main server itself if it was installed as a so called combined server (Main Server + LTSP Server + Workstation profiles).

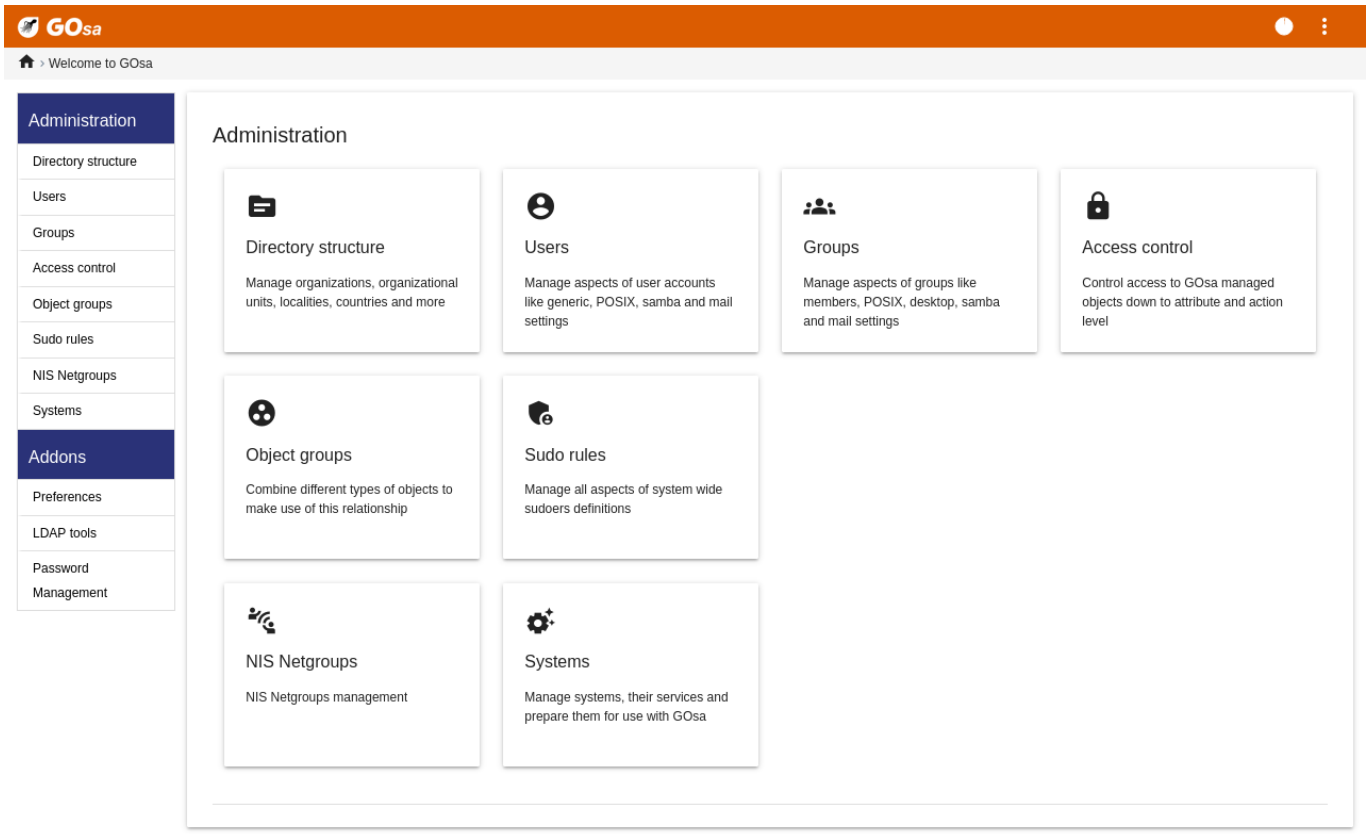
If you (probably accidentally) installed a pure *Main Server* profile and don't have a client with a web-browser handy, it's easy to install a minimal desktop on the main server using this command sequence in a (non-graphical) shell as the user you created during the main server's installation (first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

```
$ sudo apt update
$ sudo apt install task-desktop-xfce lightdm education-menus
$ sudo service lightdm start
```

Fra en internetbrowser så brug adressen https://www/gosa for adgang til GOsa², og log ind som den første bruger.

- If you are using a new Debian Edu Bookworm machine, the site certificate will be known by the browser.
- Ellers vil du se en fejlbesked om at SSL-certifikatet er forkert. Hvis du ved, at du er alene på netværket, så bare giv browseren besked om, at du accepterer den og ignorer beskeden.

7.2.1 GOsa²-logind samt overblik



Efter at du er logget ind i GOsa² får du vist overblikssiden for GOsa².

Du kan nu vælge en opgave i menuen eller klikke på en af opgaveikonerne på overblikssiden. For navigering anbefaler vi at bruge menuen i venstre side af skærmen, da den vil forblive synlig på alle administrationssider i GOsa².

In Debian Edu, account, group, and system information is stored in an LDAP directory. This data is used not only by the main server, but also by the (diskless) workstations, the LTSP servers and 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.

GOsa² er et administrationsværktøj som bruger LDAP til at gemme sin information og tilbyde en hierarkisk afdelingsstruktur. Til hver »afdeling« (department) kan du tilføje brugerkontoer, grupper, systemer, netgrupper etc. Afhængig af strukturen for din institution, kan du bruge afdelingsstrukturen i GOsa²/LDAP til at overføre din organisationsstruktur til LDAP-datatræet for Debian Edus hovedserver.

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.)

Afhængig af opgaven du ønsker at arbejde på (håndtere brugere, håndtere grupper, håndtere systemer etc.) så præsenterer GOsa² dig med en anden visning af den valgte afdeling (eller basisniveauet).

7.3 Brugerhåndtering med GOsa²

Klik først på Brugere (Users) i den venstre navigationsmenu. Højresiden af skærmen vil ændre sig og vise en tabel med afdelingsmapper for studenter (Students) og lærere (Teachers) og kontoen for GOsa²-administratoren (den først oprettede bruger). Over denne tabel kan du se et felt kaldt *Base* som tillader dig at navigere igennem din træstruktur (flyt din mus

over det område og en rullegardinsmenu kommer frem) og du kan så vælge en basismappe for dine forventede handlinger (f.eks. tilføjelse af en ny bruger).

7.3.1 Tilføje brugere

Ved siden af trænavigeringspunktet kan du se menuen Handlinger (Actions). Flyt din mus over dette punkt og en undermenu kommer frem på skærmen; vælg opret (Create) og så bruger (User). Du vil blive vejledt af guiden for brugeroprettelse.

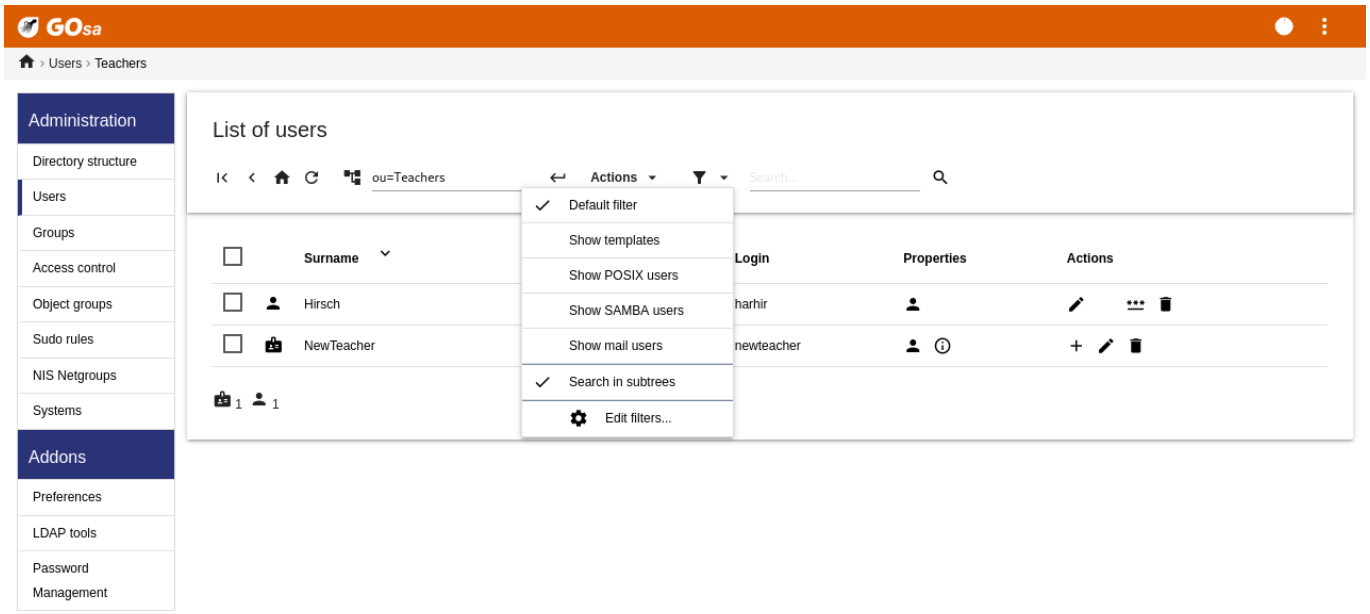
- Den vigtigste ting at tilføje er skabelonen (newstudent eller newteacher) og det fulde navn for din bruger (se billede).
- Efterhånden som du følger guiden vil du se at GOsa² opretter et brugernavn automatisk baseret på det rigtige navn. Guiden vælger automatisk et brugernavn som ikke allerede findes, så flere brugere med det samme fulde navn kommer ikke i problemer. Bemærk at GOsa² kan oprette ugyldige brugernavne hvis det fulde navn indeholder ikke-ASCII-tegn.
- Hvis du ikke er glad for det oprettede brugernavn, så kan du vælge et andet brugernavn fra rullegardinet, men du har ikke frit valg her i guiden. (Hvis du ønsker at kunne redigere det foreslåede brugernavn, så åbn `/etc/gosa/gosa.conf` med et redigeringsprogram og tilføj `allowUIDProposalModification="true"` som en yderligere valgmulighed i »location definition«)
- Når guiden er færdig, så præsenteres du for GOsa²-skærmen for dit nye brugerobjekt. Brug fanebladene øverst for at kontrollere de færdige felter.

Efter du har oprettet brugeren (intet behov for at tilpasse felterne guiden har efterladt tomme på nuværende tidspunkt), klik på knappen »O.k.« i nederste højre hjørne.

Som det sidste trin vil GOsa² spørge om en adgangskode for den nye bruger. Indtast dette dobbelt og klik så på »Angiv adgangskode« i det nederste højre hjørne.  Nogle tegn er ikke tilladte i adgangskoden.

Hvis alt gik godt, så kan du nu se den nye bruger i tabellen over brugere. Du skulle nu kunne logge ind med det brugernavn på enhver Skolelinuxmaskine i dit netværk.

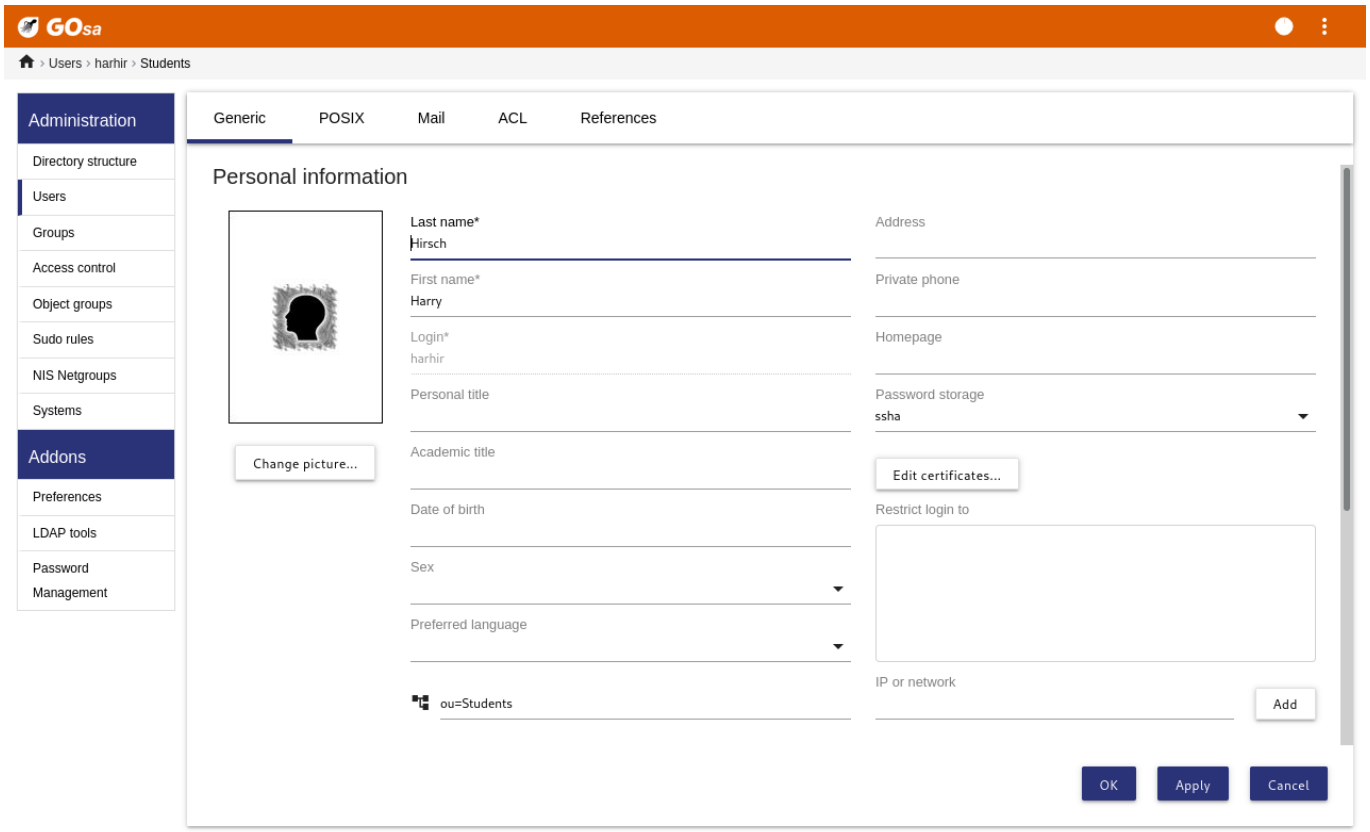
7.3.2 Søg, ændr og slet brugere



For at ændre eller slette en bruger, så brug GOsa² til at gennemse listen over brugere på dit system. I midten af skærmen kan du åbne boksen »Filter«, et søgeværktøj tilbudt af GOsa². Hvis du ikke kender den præcise placering af din brugerkonto i dit træ, så ændr basisniveauet for GOsa²/LDAP-træet og søg med indstillingen »Search in subtrees« (søg i undertræer) markeret.

Når der bruges boksen »Filter« vil resultaterne umiddelbart fremkomme i midten af teksten i tabelvisningen. Hver linje repræsenterer en brugerkonto og punkterne yderst til højre på hver linje er små ikoner, som tilbyder dig handlinger: rediger bruger, lås konto, angiv adgangskode og fjern bruger.

En ny side vil vise sig, hvor du direkte kan ændre information om brugeren, ændre adgangskoden for brugeren og ændre listen over grupper som brugeren er medlem af.



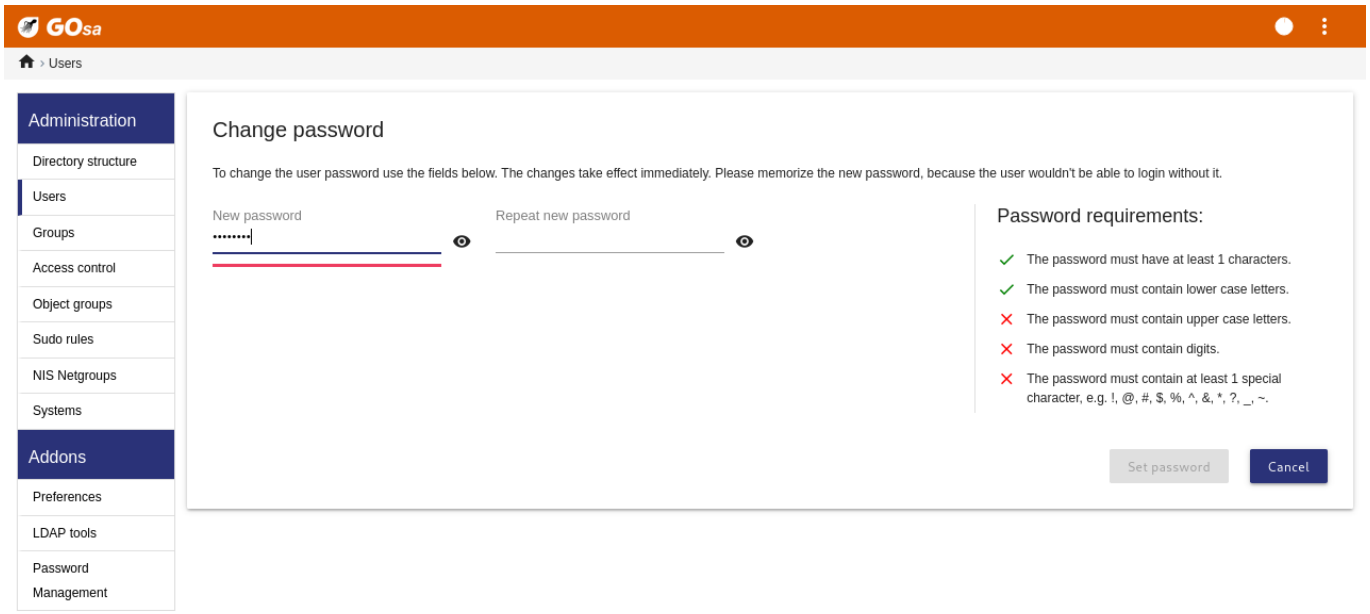
7.3.3 Angiv adgangskoder

Studenterne kan ændre deres egne adgangskoder ved at logge ind i GOsa² med deres egne brugernavne. For nemmere administration af GOsa² er et menupunkt kaldt Gosa indbygget i systemmenuen for skrivebordet (eller systemindstillinger. En indlogget student vil blive præsenteret med en meget minimal udgave af GOsa², som kun tillader adgang til studentens eget kontodataark og til dialogen for angiv adgangskode (set-password).

Lærere logget ind under deres egne brugernavne har specielle rettigheder i GOsa². De får en mere priviligeret visning af GOsa², og kan ændre adgangskoderne for alle studentkontoer. Dette kan være meget brugbart i undervisningssituationer.

Administrativ angivelse af en ny adgangskode for en bruger

1. søg efter brugeren der skal ændres, som forklaret ovenfor
2. klik på nøglesymbolet i slutningen af linjen hvor brugernavnet vises
3. på den efterfølgende side kan du angive en ny adgangskode valgt af dig selv



Be aware of security implications due to easy to guess passwords!

7.3.4 Avanceret brugerhåndtering

Det er muligt at masseoprette brugere med GOsa² ved at bruge en CSV-fil, som kan oprettes med ethvert godt regnearksprogram (for eksempel `localc`). Som minimum skal poster for de følgende felter udfyldes: uid, efternavn (sn), fornavn (givenName) og adgangskode. Sikr dig at der ikke er ens poster i uid-feltet. Bemærk venligst at for at kontrollere for ens poster skal du inkludere allerede eksisterende uid-poster i LDAP (som kan findes ved at køre `getent passwd | grep tjener/home | cut -d":-f1` på kommandolinjen).

Dette er formatvejledningerne for sådan en CSV-fil (GOsa² er ret intolerant vedrørende disse):

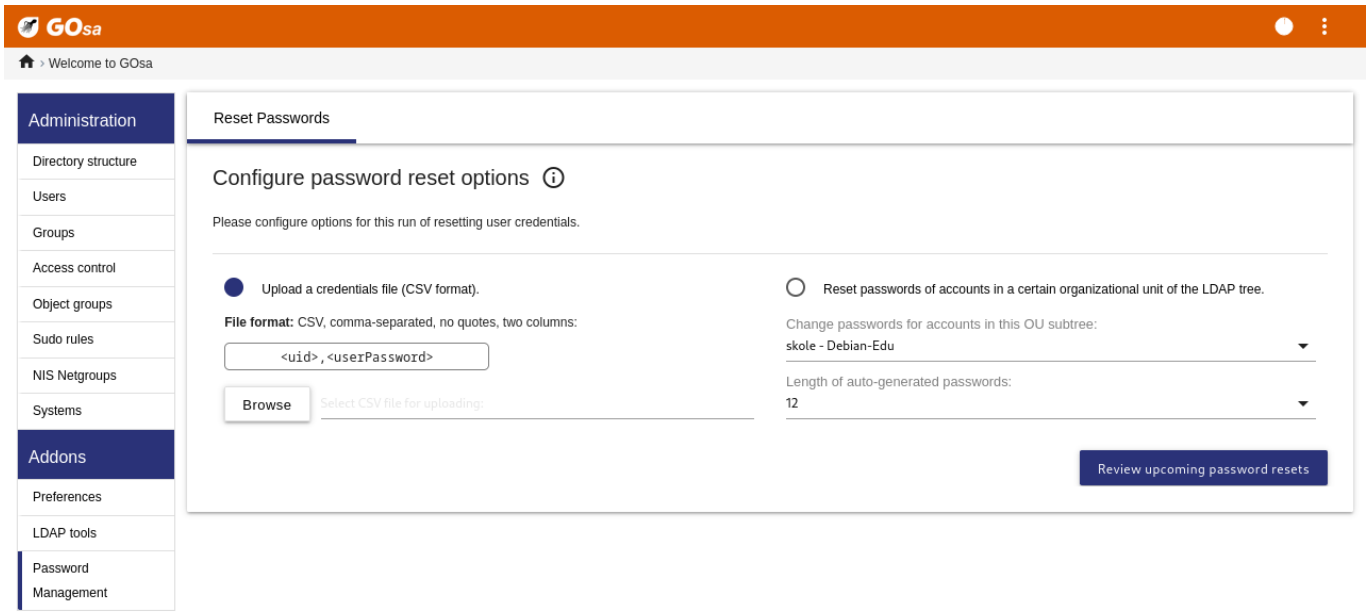
- Brug »,« som feltadskillelsestegn
- Brug ikke anførelsestegn
- CSV-filen **må ikke** indeholde en hovedlinje (af den slags som normalt indeholder kolonnenavne)
- Rækkefølgen for felterne er ikke relevant, og kan defineres i GOsa² under masseimporten

Trinene for masseimport er:

1. klik på henvisningen »LDAP Manager« i navigeringsmenuen til venstre
2. klik på fanebladet »Importer« på skærmen til højre
3. gennemse din lokale disk og vælg en CSV-fil med listen over brugere der skal importeres
4. vælg en tilgængelig brugerskabelon som skal bruges under masseimport (såsom NewTeacher eller NewStudent)
5. klik på knappen »importer« i det nederste højre hjørne

Det er en god ide at udføre nogle test først, for eksempel med en CSV-fil med nogle få fiktive brugere, som kan slettes senere.

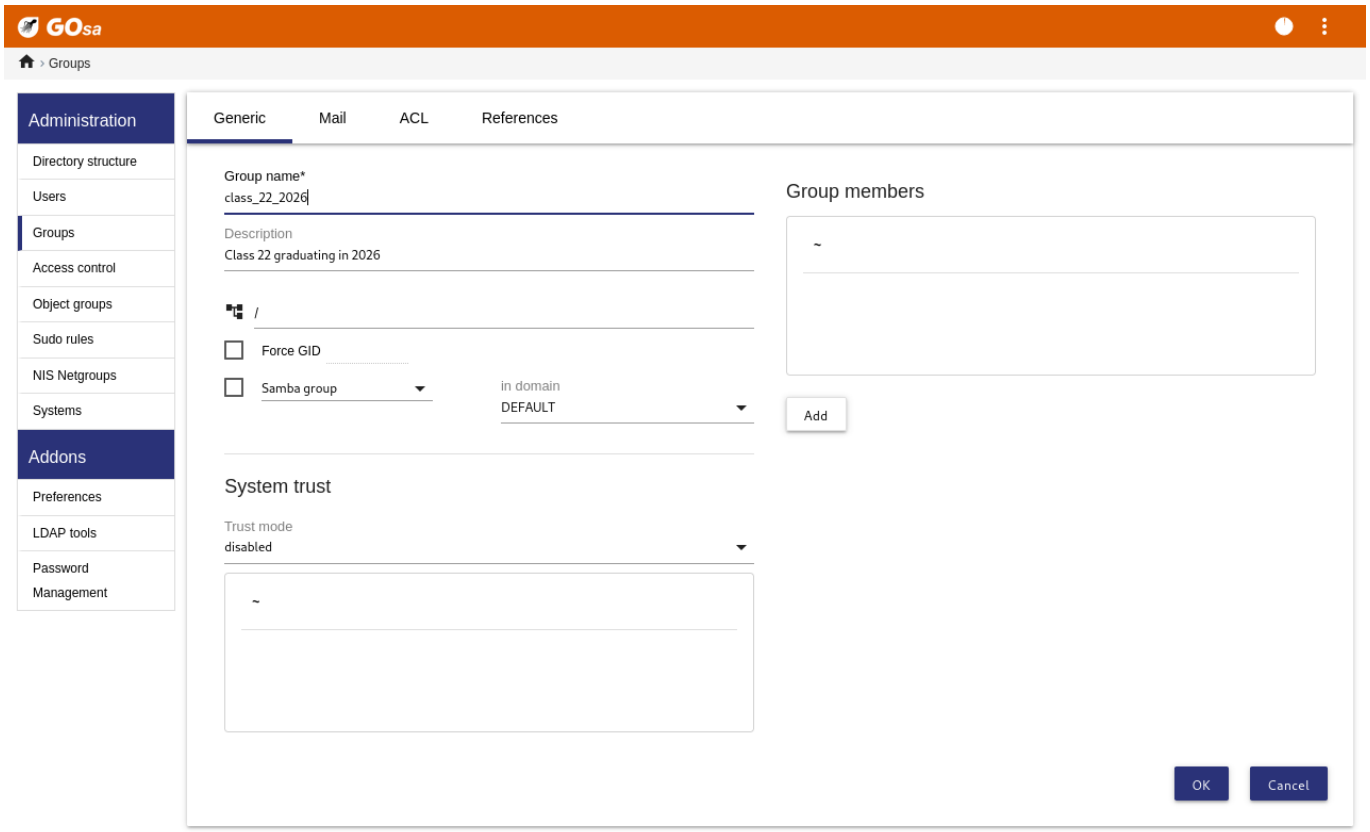
Same applies to the password management module, which allows one to reset a lot of passwords using a CSV file or to re-generate new passwords for users belonging to a special LDAP subtree.

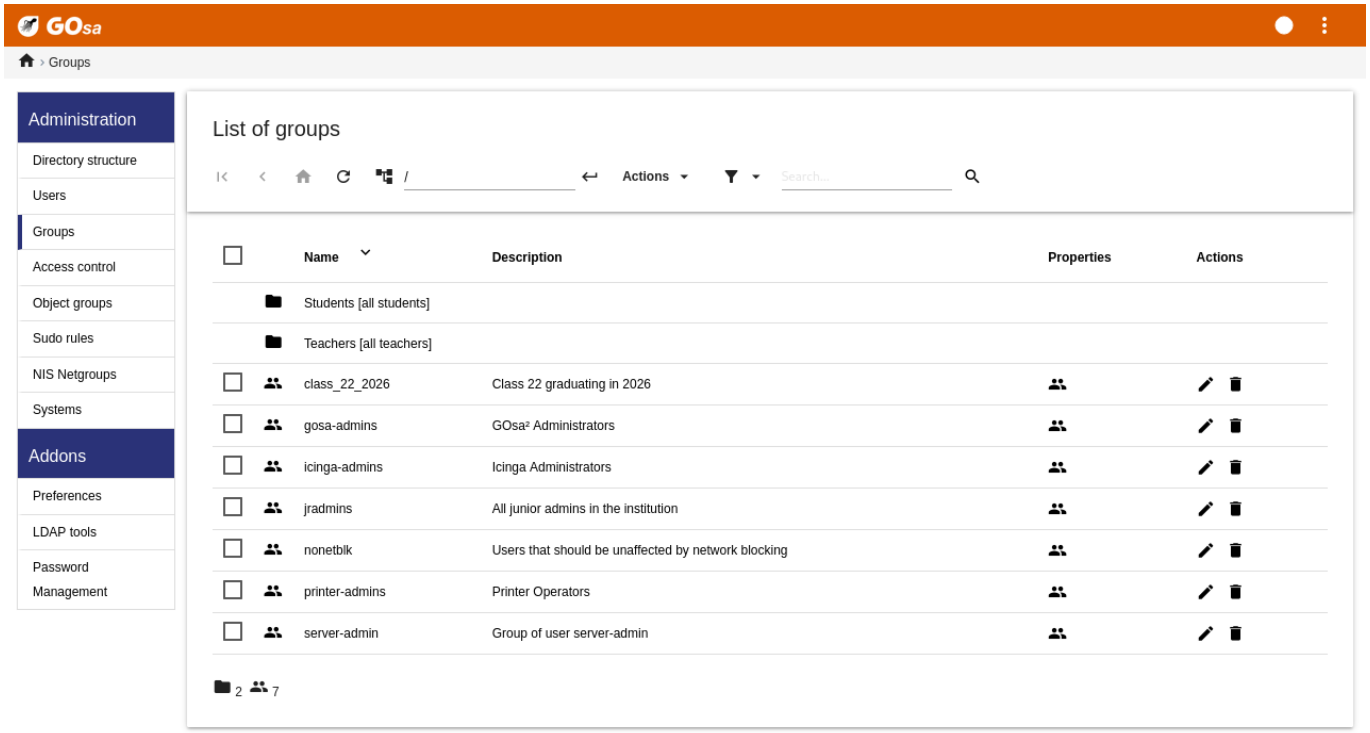


7.3.4.1 Adding users from the command line

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 Gruppehåndtering med GOsa²





Håndteringen af grupper er meget lig håndteringen af brugere.

Du kan indtaste et navn og en beskrivelse per gruppe. Sikr dig at du vælger det rigtige niveau i LDAP-træet, når du opretter en ny gruppe.

Tilføjelse af brugere til en netop oprettet gruppe fører dig tilbage til brugerlisten, hvor du højst sandsynlig har brug for filterboksen for at finde brugere. Kontroller også LDAP-træniveauet.

Grupperne indtastet i gruppehåndteringen er også regulære unix-grupper, så du kan også bruge dem til filrettigheder.

7.5 Maskinhåndtering med GOsa²

Maskinhåndtering tillader dig grundlæggende at håndtere alle netværksenheder i dit Debian Edu-netværk. Hver maskine tilføjet til LDAP-mappen med brug af GOsa² har et værtsnavn, en IP-adresse, en MAC-adresse og et domænenavn (som normalt er »intern«). For en mere fyldestgørende beskrivelse af Debian Edu-arkitekturen så se kapitlet arkitektur i denne manual.

Diskless workstations and thin clients work out-of-the-box in case of a *combined main server*.

Workstations with disks (including separate LTSP servers) **have to** be added with GOsa². Behind the scenes, both a machine specific Kerberos Principal (sort of *account*) and a related keytab file (containing a key used as *password*) are generated; the keytab file needs to be present on the workstation to be able to mount users' home directories. Once the added system has been rebooted, log into it as root and run `/usr/share/debian-edu-config/tools/copy-host-keytab`.

To create Principal and keytab file for a system *already configured with GOsa²*, log in on the main server as root and run

```
/usr/share/debian-edu-config/tools/gosa-modify-host <hostname> <IP>
```

Please note: host keytab creation is possible for systems of type *workstations*, *servers* and *terminals* but not for those of type *netdevices*. See the Network clients HowTo chapter for NFS configuration options.

To add a machine, use the GOsa² main menu, systems, add. The name of the machine is expected to be a valid **unqualified** hostname, do not add the domain name here. You can use an IP address/hostname from the preconfigured address space 10.0.0.0/8. Currently there are only two predefined fixed addresses: 10.0.2.2 (tjener) and 10.0.0.1 (gateway). The addresses from 10.0.16.20 to 10.0.31.254 (roughly 10.0.16.0/20 or 4000 hosts) are reserved for DHCP and are assigned dynamically.

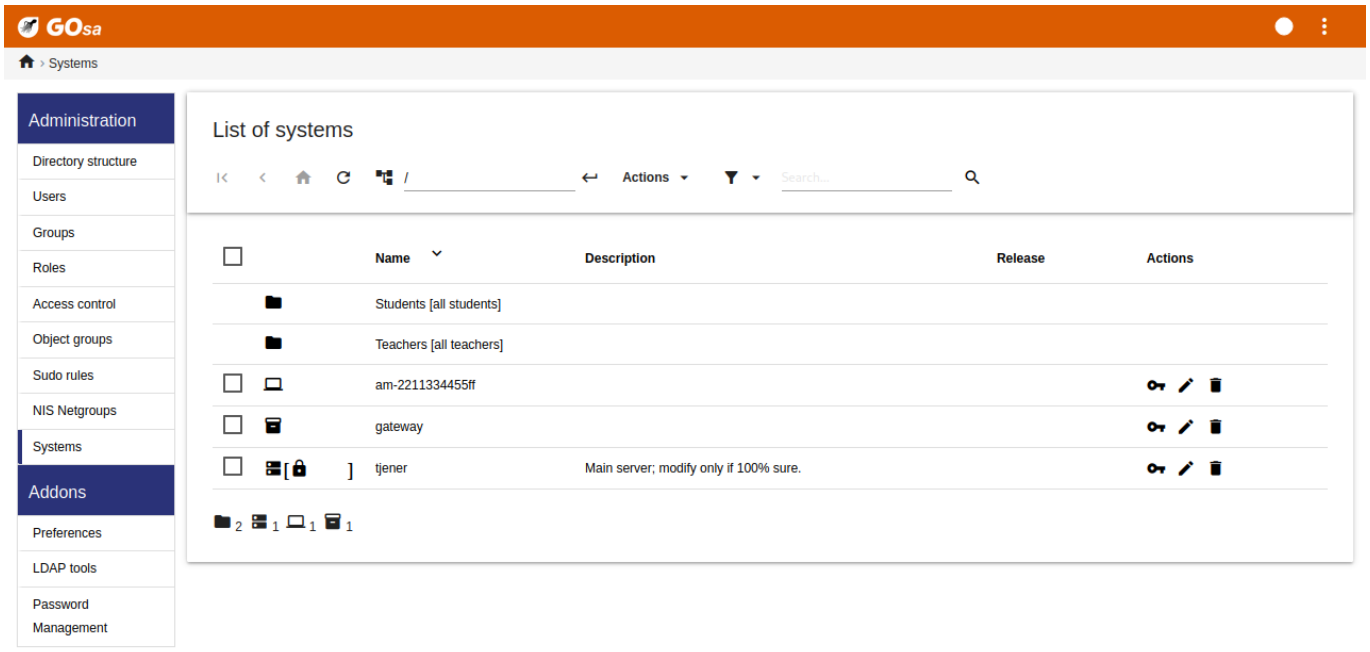
For at tildele en vært med MAC-adressen 52:54:00:12:34:10, en statisk IP-adresse i GOsa², så skal du indtaste MAC-adressen, værtsnavnet og IP'en; alternativt kan du klikke på knappen `Propose ip (foreslå IP`, som vil vise den første frie og faste adresse i 10.0.0.0/8, sikkert noget ligende 10.0.0.2 hvis du tilføjer den første maskine på denne måde. Det kan være bedre først at overveje dit netværk: For eksempel kan du bruge 10.0.0.x med x>10 og x<50 for servere, og x>100 for arbejdsstationer. Glem ikke at aktivere det netop tilføjet system. Med undtagelse af hovedserveren vil alle systemer så have et matchende ikon.

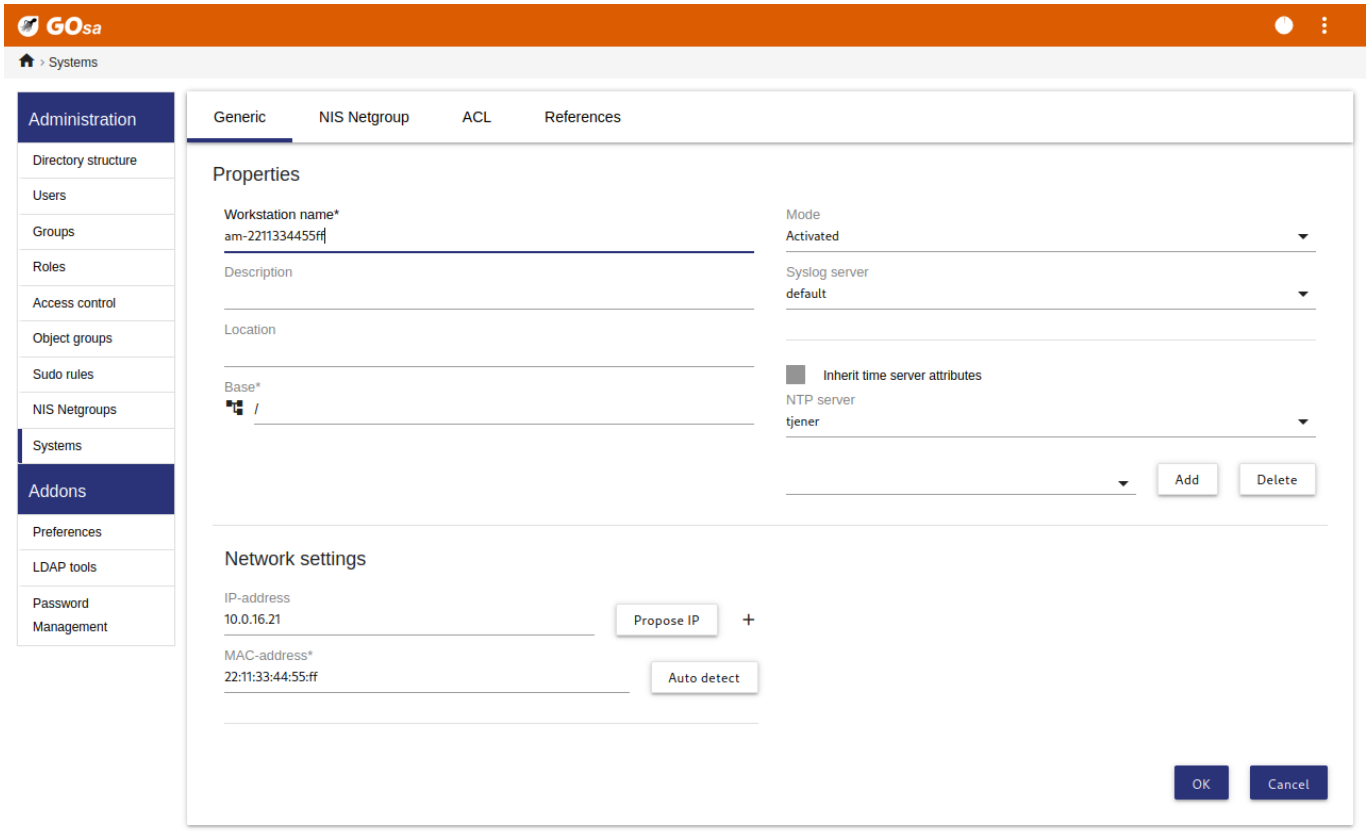
Hvis maskinerne er opstartet som tynde klienter/diskløse arbejdsstationer eller er blevet installeret med brug af nogle af netværksprofilerne, kan skriptet `sitesummary2ldapdhcp` bruges til automatisk at tilføje maskiner til GOsa². For simple maskiner vil det fungere med det samme, for maskiner med mere end en mac-adresse skal den faktisk anvendte vælges, `sitesummary2ldapdhcp -h` viser brugsinformation. Bemærk venligst at IP-adresserne vist efter brug af `sitesummary2ldapdhcp` tilhører det dynamiske IP-interval. Disse systemer kan så ændres, så de passer til dit netværk: Omdøb hvert nyt system, aktiver DHCP og DNS, tilføj den til netgroups, hvis krævet; genstart systemet efterfølgende. De følgende skærmbilleder viser hvordan dette gøres i praksis.

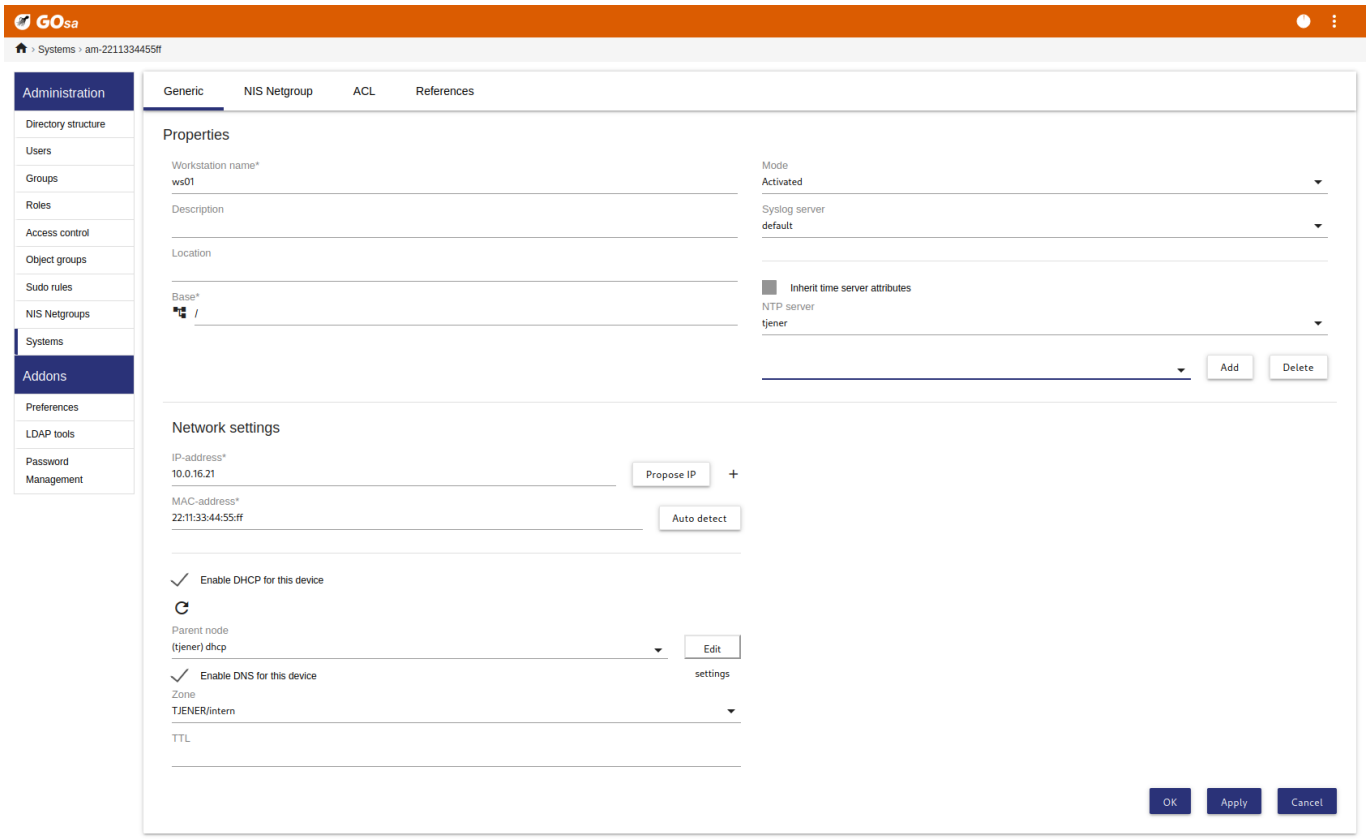
```
root@tjener:~# sitesummary2ldapdhcp -a -i ether-22:11:33:44:55:ff
info: Create GOsa machine for am-2211334455ff.intern [10.0.16.21] id ether-22:11:33:44:55: ↩
    ff.

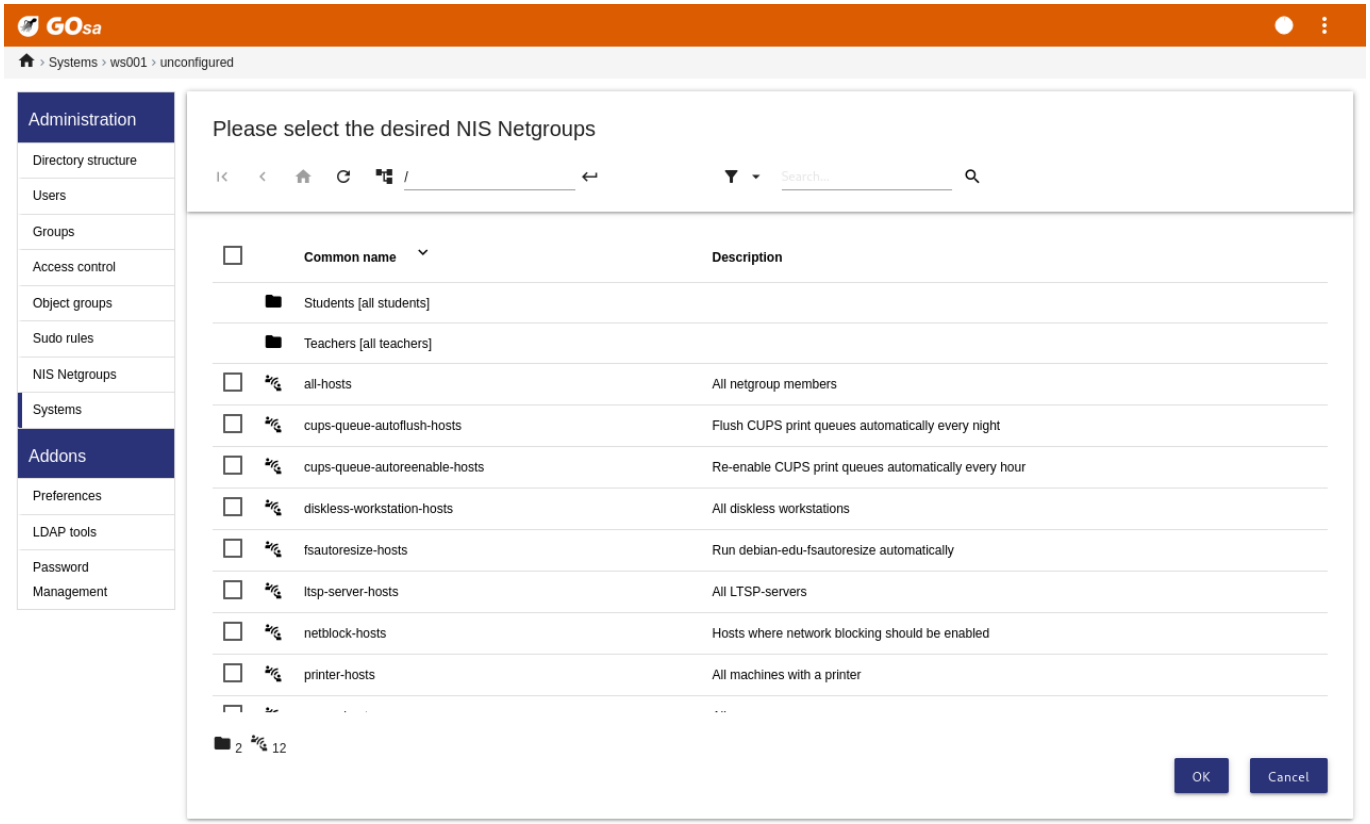
Enter password if you want to activate these changes, and ^c to abort.

Connecting to LDAP as cn=admin,ou=ldap-access,dc=skole,dc=skolelinux,dc=no
enter password: ********
root@tjener:~#
```


GOsa
Systems
Administration
Directory structure
Users
Groups
Roles
Access control
Object groups
Sudo rules
NIS Netgroups
Systems
Addons
Preferences
LDAP tools
Password Management
List of systems
Actions
Search...
Name
Description
Release
Actions
Students [all students]
Teachers [all teachers]
am-2211334455ff
gateway
tjener
Main server; modify only if 100% sure.


GOsa
Systems
Administration
Directory structure
Users
Groups
Roles
Access control
Object groups
Sudo rules
NIS Netgroups
Systems
Addons
Preferences
LDAP tools
Password Management
Generic
NIS Netgroup
ACL
References
Properties
Workstation name*
am-2211334455ff
Description
Location
Base*
Mode
Activated
Syslog server
default
Inherit time server attributes
NTP server
tjener
Add
Delete
Network settings
IP-address
10.0.16.21
Propose IP
MAC-address*
22:11:33:44:55:ff
Auto detect
OK
Cancel





Et cronjob der opdaterer DNS kører hver time; `su -c ldap2bind` kan bruges til at udløse opdateringen manuelt.

7.5.1 Søg og slet maskiner

Søgning efter og sletning af maskiner ligner på mange måder søg efter bruger og sletning af brugere, så den information gentages ikke her.

7.5.2 Ændre eksisterende maskiner / Netgroup-håndtering

Efter tilføjels af en maskine til LDAP-træet med brug af GOsa[2] kan du ændre dens egenskaber med brug af søgefunktionaliteten og klik på maskinnavnet (som du ville gøre med brugere).

Formatet for disse systemposter ligner dem du allerede kender fra ændring af brugerposter, men felterne betyder noget andet i denne kontekst.

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.

Standardinstallationen tilbyder `NetGroups`

- 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

Aktuelt bruges funktionaliteten for `NetGroup` til

- **Resizing partitions** (fsautoresize-hosts)
  - Debian Edu-maskiner i denne gruppe vil automatisk ændre størrelse på LVM-partitioner som løber tør for plads.
- **Shutdown machines at night** (shutdown-at-night-hosts and shutdown-at-night-wakeup-hosts-blacklist)
  - Debian Edu-maskiner i denne gruppe vil automatisk lukke ned om natten for at spare på energiforbruget.
- **Managing printers** (cups-queue-autoflush-hosts and cups-queue-autoreenable-hosts)
  - Debian Edu-maskiner i disse grupper vil automatisk tømme alle udskrivningskøer hver nat, og genaktivere alle deaktiverede udskrivningskøer hver time.
- **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.

8 Printerhåndtering

For centralized printer management point your web browser to https://www.intern:631. This is the normal CUPS management interface where you can add/delete/modify your printers and can clean up the printing queue. By default only the first user is allowed but this can be changed by adding users to the GOsa² printer-admins group.

8.1 Brug printere koblet til arbejdsstationer

Pakken *p910nd* installeres som standard på et system med profilen *Workstation*.

- Rediger /etc/default/p910nd således (USB printer):
  - P910ND_OPTS=-f /dev/usb/lp0"
  - P910ND_START=1
- Konfigurer printeren via netgrænsefladen https://www.intern:631; vælg netværksprintertype AppSocket/HP JetDirect (for alle printere uanset mærke eller model) og angiv socket://<workstation ip>:9100 som forbindelses-URI.

8.2 Network printers

It is recommended to disable all self-advertising features in the used network printers. Instead, assign a fixed IP address with GOsa² and configure them as AppSocket/HP JetDirect network printers.

9 Ursynkronisering

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

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

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

10 Udvid partitioner der er fyldt op

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

11 Vedligeholdelse

11.1 Opdatering af programmerne

Dette afsnit forklarer hvordan du bruger apt full-upgrade.

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).

Det er også en god ide at opgradere via C-sproget for at få engelske uddata i tilfælde af problemer, da det laver resultater der er nemmere at finde i søgemotorer.

```
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 ide at installere cron-apt og apt-listchanges og konfigurere dem til at sende post til en adresse du følger løbende med på.

cron-apt vil give dig besked en gang om dagen via e-post om pakker, som kan opgraderes. Programmet installerer ikke disse opgraderinger, men henter dem ned (normalt om natten), så du ikke skal vente på at de bliver hentet ned, når du udfører apt full-upgrade.

Automatisk installation af opdateringer kan nemt udføres, det kræver bare at pakken unattended-upgrades installeres og konfigureres som beskrevet på wiki.debian.org/UnattendedUpgrades.

apt-listchanges kan sende nye ændringslogpunkter til dig via e-post, eller alternativt vise dem i terminalen når der køres apt.

11.1.1 Hold dig informeret om sikkerhedsopdateringer

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 Sikkerhedshåndtering

For sikkerhedshåndtering så peg din browser på https://www/slbackup-php. Bemærk venligst at du skal tilgå denne side via SSL, da du skal indtaste adgangskoden for administrator (root) der. Hvis du forsøger at tilgå denne side uden at bruge SSL, så vil forbindelsen fejle.

 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 opmærksom på at denne sikkerhedskopi ikke beskytter dig mod fejlramte harddiske.

Hvis du ønsker at lave sikkerhedskopiering af dine data til en ekstern server, en båndstation eller en anden harddisk, så skal du ændre den eksisterende konfiguration en lille smule.

Hvis du ønsker at gendanne en fuldstændig mappe, er din bedste løsning at bruge kommandolinjen:

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

Dette vil kopiere indholdet fra /skole/tjener/home0/user for <date> i mappen /skole/tjener/home0/user_<date>

Hvis du ønsker at gendanne en enkelt fil, så skal du vælge filen (og versionen) fra internetgrænsefladen og hente kun den fil.

Hvis du ønsker at fjerne gamle sikkerhedskopier, så vælg Maintenance (vedligeholdelse) i menuen på siden for sikkerhedskopiering og vælg det ældste øjebliksbillede du ønsker at bevare:



11.3 Serverovervågning

11.3.1 Munin

Trendrapporteringssystemet Munin er tilgængeligt fra https://www/munin/. Programmet tilbyder målegrafer for systemstatus på en daglig, ugentlig, månedlig og årlig basis, og giver systemadministratoren hjælp, når der skal kontrolleres for flaskehalse og kilden til systemproblemer.

Listen over maskiner der overvåges med Munin oprettes automatisk, baseret på listen over værter der rapporterer til sitesummary. Alle værter med pakken munin-node installeret registreres for Muninovervågning. Det vil normalt tage en dag fra at en maskine installeres til Munins overvågning starter, på grund af rækkefølgen som cronjob udføres i. For at øge proceshastigheden så kør sitesummary-update-munin som administrator (root) på serveren for sitesummary (normalt hovedserveren). Dette vil opdatere filen /etc/munin/munin.conf.

Målesættet som indsamles oprettes automatisk på hver maskine med brug af programmet munin-node-configure, som undersøger udvidelsesmodulerne tilgængelige fra /usr/share/munin/plugins/ og laver symbolske henvisninger for de relevante til /etc/munin/plugins/.

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

11.3.2 Icinga

Icinga system and service monitoring is available from https://www/icingaweb2/. The set of machines and services being monitored is automatically generated using information collected by the sitesummary system. The machines with the profile Main-server and LTSP-server receive full monitoring, while workstations and thin clients receive simple monitoring. To enable full monitoring on a workstation, install the nagios-nrpe-server package on the workstation.

Som standard sender Icinga ikke e-post. Dette kan ændres ved at erstatte notify-by-nothing med host-notify-by-email og notify-by-email i filen /etc/icinga/sitesummary-template-contacts.cfg.

Den brugte konfigurationsfil for Icinga er /etc/icinga/sitesummary.cfg. Cronjobbet for sitesummary opretter /var/lib/sitesummary/icinga-generated.cfg med listen over værter og tjenester at overvåge.

Ekstra Icingakontroller kan placeres i filen /var/lib/sitesummary/icinga-generated.cfg.post så de bliver inkluderet i den oprettede fil.

Information om icinga er tilgængelig fra pakken http://www.icinga.com/ eller i icinga-doc.

11.3.2.1 Gængse Icingaadvarsler og hvordan de skal håndteres

Her er instruktioner på hvordan du håndterer de mest gængse Icingaadvarsler.

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

Partitionen (/usr/ i eksemplet) er fyldt op. Der er generelt to måder at håndtere dette på: (1) fjern nogle filer eller (2) øg størrelsen på partitionen. Hvis partitionen er /var/, kan afinstallation af APT-mellemlageret ved at kalde `apt clean` måske fjerne nogle filer. Hvis der er mere plads tilgængelig i LVM-diskenhedsgruppen, så kan kørsel af programmet `debian-edu-fsautoresize` måske hjælpe. For at køre dette program automatisk hver time, så kan den omtalte vært tilføjes til netgruppen `fsautoresize-hosts`.

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

New package are available for upgrades. The critical ones are normally security fixes. To upgrade, run `apt upgrade && apt full-upgrade` as root in a terminal or log in via SSH to do the same.

Hvis du ikke ønsker at opgradere pakker manuelt og stoler på at Debian gør et godt arbejde med nye versioner, så kan du konfigurere pakken `unattended-upgrades` til automatisk at opgradere alle nye pakker hver nat. Dette vil ikke opgradere LTSP-chroot'er.

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

Den kørende kerne er ældre end den nyeste installerede kerne, og en genstart er krævet for at aktivere den nyeste installerede kerne. Dette er ofte ret vigtigt, da nye kerner normalt dukker op i debian Edu for at rette sikkerhedsmæssige problemer.

11.3.2.1.4 WARNING: CUPS queue size - 61

Printerkøerne i CUPS har en masse igangværende job. Dette skyldes højst sandsynlig en utilgængelig printer. Deaktiverede printkøer aktiveres hver time på værter som er medlem af netgruppen `cups-queue-autoreenable-hosts`, så for sådanne værter er ingen manuel handling krævet. Printkøerne tømmes hver nat på værter som er medlem af netgruppen `cups-queue-autoflush-hosts`. Hvis en vært har en masse job i deres kø, så overvej at tilføje denne vært til en eller begge af disse netgrupper.

11.3.3 Sitesummary

Sitesummary bruges til at indsamle information fra hver computer og indsende informationen til en central server. Den indsamlede information er tilgængelig i `/var/lib/sitesummary/entries/`. Skripter i `/usr/lib/sitesummary/` er tilgængelige for rapportudarbejdelser.

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

Some documentation on Sitesummary is available from https://wiki.debian.org/DebianEdu/HowTo/SiteSummary

11.4 Yderligere information om Debian Edu-tilpasninger

Yderligere information om Debian Edu-tilpasninger, der er nyttige for systemadministratorer, kan ses i hjælpeafsnittet Administration og i hjælpeafsnittet avanceret administration.

12 Opgraderinger


Før du læser denne opgraderingsvejledning, så bemærk at live opdateringer til dine produktionsservere udføres på egen risiko. **Debian Edu/Skolelinux har ABSOLUT INGEN GARANTI, inden for lovens rammer.**

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

12.1 Generelle bemærkninger om opgradering

Upgrading Debian from one distribution to the next is generally rather easy. For Debian Edu this is unfortunately a bit more complicated as we modify configuration files in ways we shouldn't. However we have documented the needed steps below. (See Debian bug 311188 for more information how Debian Edu should modify configuration files.)

In general, upgrading the servers is more difficult than the workstations and the main server is the most difficult to upgrade.

Hvis du ønsker at sikre dig at alt virker som før efter opgraderingen, så skal du teste opgraderingen på et testsystem eller systemer konfigureret på samme måde som dine produktionsmaskiner. Der kan du teste opgraderingen uden risiko og se om alt virker, som det skal.

Husk også at læse informationen om den aktuelle Debian Stable-udgivelse i dennes installationsmanual.

Det kan også være klogt at vente en smule og stadig køre Oldstable i et par uger længere, så at andre kan teste opgraderingen og dokumentere eventuelle problemer de oplever. Udgivelsen Oldstable for Debian Edu vil fortsat modtage understøttelse i en periode efter den næste Stable-udgivelse, men når Debian standser understøttelse for Oldstable, så vil Debian Edu ligeledes stoppe understøttelsen.

12.2 Upgrades from Debian Edu Bullseye

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

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

Brug ikke X, brug en virtuel konsol, log ind som root.

Hvis `apt` afslutter med en fejl, så prøv at rette den og/eller køre `apt -f install` og så `apt -y full-upgrade` igen.

12.2.1 Opgrader hovedserveren

- Sikr dig at det nuværende system er opdateret:

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

- Prepare and start the upgrade to Bookworm:

```
sed -i 's/bullseye/bookworm/g' /etc/apt/sources.list
export LC_ALL=C
apt update
apt upgrade --without-new-pkgs
apt full-upgrade
```

- apt-list-changes: vær forberedt på at skulle læse en masse NYHEDER; tryk <retur> for at rulle ned, <q> for at forlade tekstfremviseren. Al information vil blive sendt til root, så du kan læse det igen senere (brug *mailx* eller *mutt*).
- Læs al debconf-information omhyggeligt, vælg »bevar den lokalt installeret version« med mindre andet er nævnt nedenfor; i de fleste tilfælde vil et tryk på retur være okay.
  - restart services: Choose yes.
  - Samba server and utilities: Choose 'keep the local version currently installed'.
  - openssh-server: Choose 'keep the local version currently installed'.

- Anvend og juster konfiguration:

```
cf-agent -v -D installation
```

- Kontroller om det opgraderede system fungerer:

Genstart; log ind som første bruger og test

- om Gosa² gui fungerer,
- om man kan forbinde til LTSP-klienter og arbejdsstationer
- om man kan tilføje/fjerne et netgruppemedlemskab af et system,
- om man kan sende og modtage intern e-post,
- om man kan håndtere printere,
- og om andre sidespecifikke ting fungerer.

12.2.2 Opgradering af en arbejdsstation

Do all the basic things like on the main server and without doing the things not needed.

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

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

13 Hjælp

- Hjælp for generel administration
- Hjælp for avanceret administration
- Hjælp for skrivebordet
- Hjælp for netværksklienter
- Hjælp for Samba
- Hjælp for undervisning og læring
- Hjælp for brugere

14 Hjælp for generel administration

Kapitlerne Kom i gang og Vedligeholdelse beskriver hvordan du kommer i gang med Debian Edu og hvordan du udfører grundlæggende vedligeholdelse. Hjælpen i dette kapitel har nogle mere »avancerede« fif.

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

Using `etckeeper`, all files in `/etc/` are tracked using Git as a version control system.

Dette gør det muligt at se hvornår en fil tilføjes, ændres og fjernes, samt hvad der har ændres sig hvis filen er en tekstfil. Git-arkivet gemmes i `/etc/.git/`.

Hver time, bliver alle ændringer automatisk optaget, hvilket tillader at konfigurationshistorik kan udtrækkes og gennemses.

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

Se resultatet af `man etckeeper` for yderligere information.

Liste over brugbare kommandoer:

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

14.1.1 Eksempler på praktisk brug

På et netop installeret system, så prøv eventuelt dette for at se alle ændringer udført siden systemet blev installeret:

```
etckeeper vcs log
```

Se hvilke filer der aktuelt ikke overvåges og hvilke som ikke er opdateret:

```
etckeeper vcs status
```

For manuelt at indsende fil, fordi du ikke ønsker at vente op til en time:

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

14.2 Ændring af størrelse på partitioner

I Debian Edu er alle partitioner udover partitionen `/boot/` på logiske LVM-diskenheder. Med Linuxkerner højere end 2.6.10 er det muligt at udvide partitioner mens de er monteret. Formindskelse af partitioner skal stadig foregå mens partitionen ikke er monteret.

Det er en god ide at undgå at oprette meget store partitioner (over lad os sige 20 GiB), på grund af den tid det tager at køre `fsck` på dem eller at genskabe dem fra sikkerhedskopier hvis behovet skulle opstå. Det er bedre, hvis muligt, at oprette flere små partitioner end en meget stor.

Hjælpeskriptet `debian-edu-fsautoresize` tilbydes for at gøre det nemmere at udvide fulde partitioner. Når det igangsættes læser skriptet konfigurationen fra `/usr/share/debian-edu-config/fsautoresizetab`, `/site/etc/fsautoresizetab` og `/etc/fsautoresizetab`. Skriptet forslår så at udvide partitioner med for lidt ledig plads, jævnfør de regler der er angivet i disse filer. Hvis det køres uden argumenter, vil skriptet kun vise de kommandoer som er krævet for at udvide filsystemet. Arguementet `-n` er krævet for rent faktisk at udføre disse kommandoer for at udvide filsystemet.

Skriptet køres automatisk hver time på alle klienter angivet i netgruppen `fsautoresize-hosts`.

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

14.2.1 Logisk diskenhedshåndtering

Logisk diskenhedshåndtering (engelsk: Logical Volume Management, forkortet LVM) gør det muligt at ændre størrelse på partitioner mens de er monteret og i brug. Du kan lære mere om LVM i LVM-hjælp.

For at udvide en logisk diskenhed manuelt så fortæller du bare kommandoen `lvextend` hvilken størrelse, du ønsker, at den skal vokse til. For eksempel for at udvide home0 til 30 GiB, så bruger du de 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 Brug af ldapvi

ldapvi er et værktøj til at redigere LDAP-databasen med et normalt tekstredigeringsprogram på kommandolinjen.

Det følgende skal køres:

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

Bemærk: `ldapvi` vil bruge det valgte redigeringsprogram. Ved at køre `export EDITOR=vim` i skallen kan man konfigurere miljøet til at hente en vi-klon som redigeringsprogram.

 Advarsel: `ldapvi` er et meget funktionsrigt værktøj. Vær forsigtig og ødelæg ikke LDAP-databasen, samme advarsel gælder for JXplorer.

14.4 Kerberized 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 How to change the default

Hovedserver

- log ind som 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 værktøj gør det muligt at angive standardprinteren afhængig af sted, maskine eller gruppemedlemskab. For yderligere oplysninger, se `/usr/share/doc/standardskriver/README.md`.

Konfigurationsfilen `/etc/standardskriver.cfg` skal være installeret af adminsitratoren, se `/usr/share/doc/standardskriver/examples/standardskriver.cfg` for et eksempel.

14.6 JXplorer, en grafisk brugerflade for LDAP

Hvis du foretrækker en grafisk brugerflade til arbejdet med LDAP-databasen, så se pakken `jxplorer`, som installeres som standard. For at få skriveadgang forbindes således:

```
host: ldap.intern
port: 636
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-krb` 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$TWnq55O1rvyLhjF.$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$TWnq55O1rvyLhjF.$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 Brug af stable-updates

Selvom du kan bruge stable-updates direkte, så er det ikke et krav: stable-updates overføres til programpakken stable med faste intervaller, når punktudgivelserne er klar, hvilket sker cirka hver anden måned.

14.9 Brug af backports til at installere nyere programmer

Du kører Debian Edu fordi du fortrækker stabiliteten i Debian Edu. Det fungerer bare; der er kun et lille problem: Nogle gange er programmerne noget ældre end du ville ønske. Det er her backports.debian.org kommer ind i billedet.

Backporte er rekompilerede pakker fra Debian testing (hovedsagelig) og Debian unstable (kun i nogle få tilfælde, f.eks. sikkerhedsopdateringer), så de vil køre uden nye biblioteker (hvor dette er muligt) på en stabil Debiandistribution såsom Debian Edu. **Vi anbefaler at du udvælger de individuelle backporte som passer til dit behov, og ikke at du bruger alle tilgængelige backporte.**

Brug af backports er nemt:

```
echo "deb http://deb.debian.org/debian/ bookworm-backports main" > /etc/apt/sources.list.d/ ↩
    bookworm-backports.sources.list
apt update
```

Hvorefter man nemt kan installere pakker fra backported, den følgende kommando vil installere en backported-version for *tuxtype*:

```
apt install tuxtype/bookworm-backports
```

Backports opdateres automatisk (hvis tilgængelige) ligesom andre pakker. Som det normale arkiv har backports tre afsnit: main, contrib og non-free.

14.10 Opgradering med en cd eller lignede aftryk

If you want to upgrade from one version to another (for example from Bookworm 12.1 to 12.2) but you do not have Internet connectivity, only physical media, follow these steps:

Indsæt cd/dvd/blue-ray/USB-drev og brug kommandoen apt-cdrom:

```
apt-cdrom add
```

For at citere manualsiden apt-cdrom(8):

- apt-cdrom bruges til at tilføje en ny cdrom til APT's liste over tilgængelige kilder. apt-cdrom bestemmer strukturen for disken samt korrektion af flere mulige fejlbrændinger og verificering af indeksfilerne.
- Det er nødvendigt at bruge apt-cdrom til at tilføje cd'er til APT-systemet, det kan ikke gøres manuelt. Derudover skal hver disk i et sæt med flere cd'er indsættes og skannes separat for at tage højde for eventuelle fejlbrændinger.

Kør så disse to kommandoer for at opgradere systemet:

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

14.11 Automatisk oprydning af tilbageværende processer

`killer` er et Perlskript, som fjerner baggrundsjob. Baggrundsjob er defineret som processer, som tilhører brugere som aktuelt ikke er logget ind på maskinen. Det køres som cronjob hver time.

14.12 Automatisk installatoin af sikkerhedsopgraderinger

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

14.13 Automatisk nedlukning af maskiner om 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.

Der bør foretages nogle overvejelser når dette sættes op:

- 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 at undgå at relæet går, er det en god ide at alle klienterne ikke tænder på samme tidspunkt.
- There are two different methods available to wake up clients. One uses a BIOS feature and requires a working and correct hardware clock, as well as a motherboard and BIOS version supported by `nvram-wakeup`; the other requires clients to have support for Wake-on-LAN, and the server to know about all the clients that need to be woken up.

14.13.1 Sådan sættes shutdown-at-night (nedlukning om natten) op

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 `/etc/shutdown-at-night/clients-generator` for brug med sitesummary:

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

Et alternativ hvis netgruppen bruges til at aktivere shutdown-at-night på klienter er dette skript som bruger netgruppeværktøjet fra pakken `ng-utils`:

```
#!/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 at tilgå maskiner bag en brandmur fra internettet, så overvej at installere pakken `autossh`. Den kan bruges til at opsætte en SSH-tunnel til en maskine på internettet, som du har adgang til. Fra den maskine, kan du tilgå serveren bag brandmuren 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).

Dette er de krævede trin for at opsætte en maskine dedikeret til udvalgte tjenester:

- choose the *Minimal* profile during installation
- installer pakkerne for tjenesten
- konfigurer tjenesten
- disable the service on the main server
- update DNS (via LDAP/GOsa²) on the main server

14.16 Hjælp 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

15 Avanceret administration - hjælp

I dette kapitel er avancerede administrationsopgaver beskrevet.

15.1 Brugertilpasninger med GOsa²

15.1.1 Opret brugere 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 root på hovedserveren)

- Lav de nødvendige årsgruppemapper

mkdir /skole/tjener/home0/2024

(som første bruger i Gosa)

- Afdeling

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.

- Skabelon

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.

- Importbrugere

Vælg din nye skabelon under udførelse af csv-import; det anbefales at teste den med nogle få brugere.

15.2 Andre brugertilpasninger

15.2.1 Oprette mapper i hjemmemapperne for alle brugere

Med dette skript kan administratoren oprette en mappe i hver brugers hjemmemappe og angive adgangsrettigheder og ejerskab.

I eksemplet vist nedenfor med gruppe=lærere (group=teachers) og rettigheder=2770 kan en bruger indlevere en opgave ved at gemme filen i mappen »assignments« (opgaver) hvor lærere har fået skriveadgang så de kan lave 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"
```

15.3 Brug en dedikeret lagerserver

Benyt disse trin til at opsætte en dedikeret lagerserver for brugernes hjemmemappe og muligvis andre data.

- Add a new system of type `server` using GOsa² as outlined in the **Getting started** chapter of this manual.
  - Dette eksempel bruger »nas-server.intern« som servernavn. Når først »nas-server-intern« er konfigureret, så kontroller om NFS-eksportstederne på den nye lagerserver eksporteres til de relevante undernet eller maskiner:

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

    her får alt på backbone-netværket adgang til /storage-eksport. (Dette kan begrænses til netgroup-medlemsskab eller enkelte IP-adresser for at begrænse NFS-adgang som det gøres i tjener:/etc/exports-filen).

- Tilføj automount-information om »nas-server.intern« i LDAP for at alle klienter automatisk montererer den nye eksport ved forespørgsel.
  - Dette kan ikke gøres med GOsa², da et modul for automatisk montering mangler. I stedet kan du bruge ldapvi og tilføje de krævede LDAP-objekter med et redigeringsprogram.
    `ldapvi --ldap-conf -ZD '(cn=admin)' -b ou=automount,dc=skole,dc=skolelinux,dc=no`
    Når redigeringsprogrammet viser sig, så tilføj LDAP-objekterne i bunden af dokumentet. (»&«-delen i det sidste LDAP-objekt er et jokertegn, der matcher alt »nas-server.intern« eksporterer, hvilket fjerner behovet for at opremse individuelle monteringspunkter i LDAP).

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

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

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

- Tilføj de relevante punkter i tjener.intern:/etc/fstab, da tjener.intern ikke bruger automount til at undgå monteringsloop:
  - Opret monteringsmapperne med `mkdir`, rediger »/etc/fstab« på passende vis og kør `mount -a` for at montere de nye ressourcer.

Now users should be able to access the files on 'nas-server.intern' directly by just visiting the '/tjener/nas-server/storage/' directory using any application on any workstation, LTSP thin client or LTSP server.

15.4 Restrict SSH login access

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

15.4.1 Opsætning uden LTSP-klienter

Hvis ingen LTSP-klienter bruges er en simpel løsning at oprette en ny gruppe (`sshusers`) og at tilføje linjen til maskinens /etc/ssh/sshd_config-fil. Kun medlemmer af gruppen `sshusers` vil have tilladelse til at benytte ssh for at få adgang til maskinen.

Håndtering af denne opsætning med GOsa er meget simpel:

- Opret en gruppe `sshusers` på basisniveau (hvor allerede andre sytemhåndteringsrelaterede grupper såsom `gosa-admins` bliver vist).
- Tilføj brugere til den nye gruppe `sshusers`.
- Tilføj `AllowGroups sshusers` til /etc/ssh/sshd_config.
- Kør `service ssh restart`

15.4.2 Opsætning 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.

- Aktiver pam_access.so i LTSP-serverens /etc/pam.d/sshd-fil.
- Konfigurer /etc/security/access.conf så forbindelser for (prøve) brugerne alice, jane, bob og john er tilladt fra overalt og for alle andre brugere alene fra de interne netværk ved at tilføje disse linjer:

```
+ : 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 bemærkning vedrørende mere komplekse opsætninger

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 Hjælp for skrivebordet

16.1 Opsæt et skrivebordsmiljø med flere sprog

To support multiple languages these steps need to be done:

- Kør `dpkg-reconfigure locales` (som root) og vælg sprogene (UTF-8-varianter).
- Kør disse kommandoer som root for at installere de relevante pakker:

```
apt update
/usr/share/debian-edu-config/tools/install-task-pkgs
/usr/share/debian-edu-config/tools/improve-desktop-l10n
```

Users will then be able to choose the language via the LightDM display manager before logging in; this applies to Xfce, LXDE and LXQt. GNOME and KDE both come with their own internal region and language configuration tools, use these. MATE uses the Arctica greeter on top of LightDM whithout a language chooser. Run `apt purge arctica-greeter` to get the stock LightDM greeter.

16.2 Afspilning af dvd'er

libdvdcss er krævet for at afspille de fleste kommercielle dvd'er. Af juridiske årsager er programmet ikke inkluderet i Debian (Edu). Hvis det er lovligt for dig at bruge programmet, så kan du bygge dine egne lokale pakker via Debianpakken `libdvd-pkg`; sikr dig at `contrib` er aktiveret i `/etc/apt/sources.list`.

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

Svar på debconf-spørgsmålene, kør så `dpkg-reconfigure libdvd-pkg`.

16.3 Håndskrevne skrifttyper

Pakken `fonts-linex` (som installeres som standard) installerer skrifttypen »Abecedario« som er en pæn håndskrevet skrifttype for børn. Skrifttypen har flere varianter, som kan bruges af børn: prikket og med linjer.

17 Hjælp for netværksklienter

17.1 Introduktion til tynde klienter og diskløse arbejdsstationer

One generic term for both thin clients and diskless workstations is *LTSP client*.


Starting with Bullseye, LTSP is quite different from the previous versions. This concerns both setup and maintenance.

- As one main difference, the SquashFS image for diskless workstations is now generated from the LTSP server file system by default. This happens on a combined server at first boot, taking some time.
- Thin clients are no longer part of LTSP. Debian Edu uses X2Go to still support thin client usage.
- In case of a separate or an additional LTSP server, required information for setting up the LTSP client environment isn't complete at installation time. Setup can be done once the system has been added with GOsa[2].

For information about LTSP in general, see the LTSP homepage. On systems with *LTSP server* profile, `man ltsp` provides more information.

Please note that the *ltsp* tool from LTSP has to be used carefully. For example, `ltsp image /` would fail to generate the SquashFS image in case of Debian machines (these have a separate /boot partition by default), `ltsp ipxe` would fail to generate the iPXE menu correctly (due to Debian Edu's thin client support), and `ltsp initrd` would mess up LTSP client boot completely.

The **debian-edu-ltsp-install** tool is a wrapper script for `ltsp image`, `ltsp initrd` and `ltsp ipxe`. It is used to setup and configure diskless workstation and thin client support (both 64-Bit and 32-Bit PC). See `man debian-edu-ltsp-install` or the script content to see how it works. All configuration is contained in the script itself (HERE documents) to facilitate site specific adjustments.

Examples how to use the wrapper script *debian-edu-ltsp-install*:

- `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-ipxe** tool is a wrapper script for `ltsp ipxe`. It makes sure that the /srv/tftp/ltsp/ltsp.ipxe 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 arbejdsstation

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[2].

Tynd klient

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.

LTSP-klientfirmware

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 LTSP-klienttypemarkering

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 it's 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 Brug et andet LTSP-klientnetværk

192.168.0.0/24 er standardnetværk for LTSP-klienten hvis en maskine installeres via LTSP-profilen. Hvis en masse LTSP-klienter bruges eller hvis forskellige LTSP-klienter skal betjene både i386- og amd64-chrootmiljøer kan det andet prækonfigurerede netværk 192.168.1.0/24 også anvendes. Rediger filen `/etc/network/interfaces` og juster eth1-indstillingerne. Brug `ldapvi` eller et andet LDAP-redigeringsprogram til at inspicere DNS- og DHCP-konfigurationen.

17.1.3 Tilføj LTSP-chroot til at understøtte 32-bit 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

LTSP-tynde klienter bruger netværkslyd til at sende lyd fra serveren til klienterne.

LTSP-diskløse arbejdsstationer håndterer lyd lokalt.

17.1.6 Access to USB drives and CD-ROMs/DVDs

When users insert a USB drive or DVD / CD-ROM into a Diskless Workstation, a corresponding icon appears on the desktop, allowing access to the content as on a workstation.

When users insert a USB drive into an X2Go thin client of type bare (default combined server installation), the media is mounted as soon as the existing folder icon on the Xfce desktop is double-clicked. Depending on the media content it might take some time until the content shows up in the file manager.

17.1.6.1 En advarsel om flytbart medie på LTSP-servere

When inserted into an LTSP server, USB drives and other removable media cause the related folder icon to appear on LTSP thin client desktops. Remote users can access the files.

17.1.7 Brug printere koblet til LTSP-klienter

- Kobl printeren til LTSP-klientmaskinen (både USB og parallel port er understøttet).
- Configure the LTSP client with GOsa[2] to use a fixed IP address.
- Configure the printer using the web interface `https://www.intern:631` on the main server; choose network printer type `AppSocket/HP JetDirect` (for all printers regardless of brand or model) and set `socket://<LTSP client ip>:9100` as connection URI.

17.2 Modifying the PXE setup

PXE stands for Preboot eXecution Environment. Debian Edu now uses the iPXE implementation for easier LTSP integration.

17.2.1 Konfiguration af PXE-menuen

The iPXE menu item concerning system installations is generated using the script `debian-edu-pxeinstall`. It allows some settings to be overridden using the file `/etc/debian-edu/pxeinstall.conf` with replacement values.

17.2.2 Konfiguration af PXE-installationen

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

Yderligere information om ændring af PXE-installationer kan findes i kapitlet Installation.

17.2.3 Tilføjelse af et tilpasset arkiv for PXE-installationer

For at tilføje et tilpasset arkiv, så tilføj noget som `/etc/debian-edu/www/debian-edu-install.dat.local`:

```
d-i     apt-setup/local1/repository string      http://example.org/debian stable main  ↩
    contrib non-free
d-i     apt-setup/local1/comment string         Example Software Repository
d-i     apt-setup/local1/source boolean         true
d-i     apt-setup/local1/key    string          http://example.org/key.asc
```

og kør så `/usr/sbin/debian-edu-pxeinstall` en gang.

17.3 Ændre netværksopsætning

Pakken debian-edu-config indeholder et værktøj, som hjælper med at ændre netværket 10.0.0.0/8 til noget andet. Se eventuelt /usr/share/debian-edu-config/tools/subnet-change. Det er lavet for brug lige efter installationen på hovedserveren, for at opdatere LDAP og andre filer, som skal redigeres for at ændre undernettet.

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

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

17.4 Fjernskrivebord

Choosing the LTSP server profile or the combined server profile also installs the *xrdp* and *x2goserver* packages.

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.

Derudover kan xrdp forbinde til en VNC-server eller en anden RDP-server.

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 Tilgængelige klienter for fjernskrivebord

- `freerdp-x11` installeres som standard og kan RDP og VNC.
  - RDP - den nemmeste måde at tilgå Windows' terminalserver. En alternativ klientpakke er `rdesktop`.
  - VNC-klient (Virtual Network Computer) giver adgang til Skolelinux eksternt. En alternativ klientpakke er `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 catched 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://mutonufoai.github.io/pgina/download.html
- http://mutonufoai.github.io/pgina/documentation/plugins/ldap.html
- https://serverfault.com/questions/516072/how-to-configure-pgina-ldap-plugin

18 Samba i Debian Edu

Samba is now configured as *standalone server* with modern SMB2/SMB3 support and usershares enabled, see `/etc/samba/smb-debian-edu.conf` 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*.

Bemærk venligst:

- 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 GOsa[2].
- 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 Tilgå 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 Hjælp for undervisning og læring

Alle Debianpakkerne på denne side kan installeres ved at køre `apt install <package>` (som root).

19.1 Undervisning i programmering

stable/education-development er en metapakke, der afhænger af en masse programmeringsværktøjer. Bemærk venligst at næsten 2 GiB diskplads er krævet hvis denne pakke installeres. For yderligere detaljer (måske for at installere nogle få pakker), se siden for Debian Edu-udviklingspakkerne.

19.2 Overvågning af elever

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

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

19.3 Begrænsning af elevers netværksadgang

Some schools use Squidguard or e2guardian to restrict Internet access.

20 Hjælp for brugere

20.1 Ændre adgangskoder

Hver bruger skal ændre sin adgangskode ved at bruge GOsa². Brug en browser og gå til `https://www/gosa/`.

Using GOsa² to change the password ensures that passwords for Kerberos (krbPrincipalKey), LDAP (userPassword) and Samba are the same.

Ændring af adgangskoder med PAM virker også ved GDM-logindet, men dette vil kune opdatere adgangskoden for Kerberos, og ikke adgangskoden for Samba og GOsa² (LDAP). Så efter at du har ændret din adgangskode ved logindet, så skal du også ændre adgangskoden med GOsa².

20.2 Kørsel af uafhængige Javaprogrammer

Uafhængige Javaprogrammer understøttes direkte af kørselstiden OpenJDK Java.

20.3 Brug af e-post

Alle brugere kan sende og modtage post i det interne netværk; certifikater tilbydes til TLS-sikrede forbindelser. For at tillade post uden for det interne netværk skal administratoren konfigurere postserveren `exim4` til den lokale situation, startende med `dpkg-reconfigure exim4-config`.

Hver bruger som ønsker at bruge Thunderbird skal konfigurere programmet således. For en bruger med brugernavnet jdoe er den interne e-postadresse jdoe@postoffice.intern.

20.4 Thunderbird

- Start Thunderbird
- Klik på »Udelad dette og brug min eksisterende e-post«
- Indtast din e-post-adresse
- Indtast ikke en adgangskode da Kerberos' single sig on vil blive brugt
- Klik »Fortsæt«
- For både IMAP og SMTP skal indstillingerne være »STARTTLS« og »Kerberos/«GSSAPI«; juster hvis ikke registreret automatisk
- Klik »Færdig«

21 Bidrag

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 god måde at lære noget om hvad der sker i udviklingen af Debian Edu er at abonnere på postlisten for indsendelse (commit).

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 Dokumentationsforfattere og oversættere

Dette dokument har brug for din hjælp! Først og fremmest, så er det endnu ikke færdig: Hvis du læser igennem vil du bemærke diverse FIXME (RETMIG) i teksten. Hvis du ved noget (bare en smule) om hvad der skal forklares de steder, så overvej at dele din viden med os.

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 anden god måde at bidrage på og hjælpe brugerne er ved at oversætte programmer og dokumentation. Information om hvordan dette dokument oversættes kan findes i oversættelseskapitlet for denne bog. Overvej venligt at hjælpe med oversættelsesindsatsen for denne bog!

22 Hjælp

22.1 Frivilligt baseret hjælp

22.1.1 på engelsk

- https://lists.debian.org/debian-edu - postlister for hjælp
- #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.debian.org - IRC-kanal med hjælp for norske brugere

22.1.3 på tysk

- https://lists.debian.org/debian-edu-german - support mailing list
- #skolelinux på irc.debian.org - IRC-kanal med hjælp for tyske brugere

22.1.4 på fransk

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

22.2 Professionel hjælp

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

23 New features in Debian Edu Bookworm

23.1 New features for Debian Edu 12 Bookworm

23.1.1 Installationsændringer

- 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 Programopdateringer

- 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^2 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 Opdateringer af dokumentation og oversættelser

- 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, Spanish, Romanian and Ukrainian.

23.1.4 Kendte problemstillinger

- see the Debian Edu Bookworm status page.

24 Ophavsret og forfattere

This document is written and copyrighted by Holger Levsen (2007-2024), Petter Reinholdtsen (2001, 2002, 2003, 2004, 2007, 2008, 2009, 2010, 2012, 2014), Daniel Heß (2007), Patrick Winnertz (2007), Knut Yrvin (2007), Ralf Gesellensetter (2007), Ronny Aasen (2007), Morten Werner Forsbring (2007), Bjarne Nielsen (2007, 2008), Nigel Barker (2007), José L. Redrejo Rodríguez (2007), John Bildoy (2007), Joakim Seeberg (2008), Jürgen Leibner (2009, 2010, 2011, 2012, 2014), Oded Naveh (2009), Philipp Hübner (2009, 2010), Andreas Mundt (2010), Olivier Vitrat (2010, 2012), Vagrant Cascadian (2010), Mike Gabriel (2011), Justin B Rye (2012), David Prévot (2012), Wolfgang Schweer (2012-2024), Bernhard Hammes (2012), Joe Hansen (2015), Serhii Horichenko (2022) and Guido Berhörster (2023) and is released under the GPL2 or any later version. Enjoy!

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25 Oversættelse af dette dokument

There is an online overview of packaged translations, updated frequently.

25.1 Hvordan oversættes dette dokument

25.1.1 Oversæt via 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 Oversæt på nettet via en internetbrowser

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

Rapporter det venligst hvis du har problemer.

26 Appendiks A - The GNU General Public License

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 Installationsændringer

- 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 Programopdateringer

- 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 indeholder cirka 59.000 pakker, som er tilgængelige for installation.
  - More information about Debian 11 bullseye is provided in the release notes and the installation manual.

27.1.3 Opdateringer af dokumentation og oversættelser

- 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 ændringer sammenlignet med den forrige udgivelse

- 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.
- New LTSP, re-written from scratch, dropping thin client support. Thin clients are now supported using 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^2 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 Historisk information om ældre udgivelser

Følgende Debian Edu-udgivelser har været lavet tidligere:

- Debian Edu 10+edu0 Codename Buster released 2019-07-06.
- Debian Edu 9+edu0 Codename Stretch released 2017-06-17.
- Debian Edu 8+edu0 Codename Jessie released 2016-07-02.
- Debian Edu 7.1+edu0 Codename Wheezy released 2013-09-28.
- Debian Edu 6.0.7+r1 kodenavn »Squeeze« udgivet 03-03-2012
- Debian Edu 6.0.4+r0 kodenavn »Squeeze« udgivet 11-03-2012
- Debian Edu 5.0.6+edu1 kodenavn »Lenny« udgivet 05-10-2010
- Debian Edu 5.0.4+edu0 kodenavn »Lenny« udgivet 08-02-2010
- Debian Edu »3.0r1 Terra« version 05-12-2007

- Debian Edu »3.0r0 Terra« udgivet 22-07-2007. Baseret på Debian 4.0 Etch udgivet 08-04-2007.
- Debian Edu 2.0, udgivet 14-03-2006. Baseret på Debian 3.1 Sarge udgivet 06-06-2005.
- Debian Edu »1.0 Venus« udgivet 20-06-2004. Baseret på Debian 3.0 Woody udgivet 19-07-2002.

Et fuldstændigt og detaljeret overblik om ældre udgivelser er indeholdt i Appendiks C af Jessiemanualen; eller se de relaterede udgivelsesmanualer på siden for udgivelsesmanualer.