NOC-PS manual
English version

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Installation

System requirements

For easy of use, the NOC-PS software is shipped as a so called “virtual appliance”, that requires little configuration to get it up and running.

To install the NOC-PS software the following system requirements apply:

- The NOC-PS virtual appliance has to be installed under one of the following hypervisors:
  - Vmware ESXi 3.5
  - Vmware Vsphere
  - Citrix Xenserver
  - HyperV
- The host system must have a processor that supports 64-bit instructions. (all AMD Opteron processors and the latest generation of Intel Xeon processor support this).
- The virtual appliance has to be assigned a dedicated public IP-address that has direct Internet connectivity. This is required to be able to automatically download the necessary operating system installation files, upon first use. Proxy servers are NOT supported.
- No other DHCP servers may be active in the appliance's VLAN.

The following requirements apply to the dedicated servers that you wish to provision with NOC-PS:

- The servers to be provisioned have to be located in the same VLAN as the NOC-PS appliance.

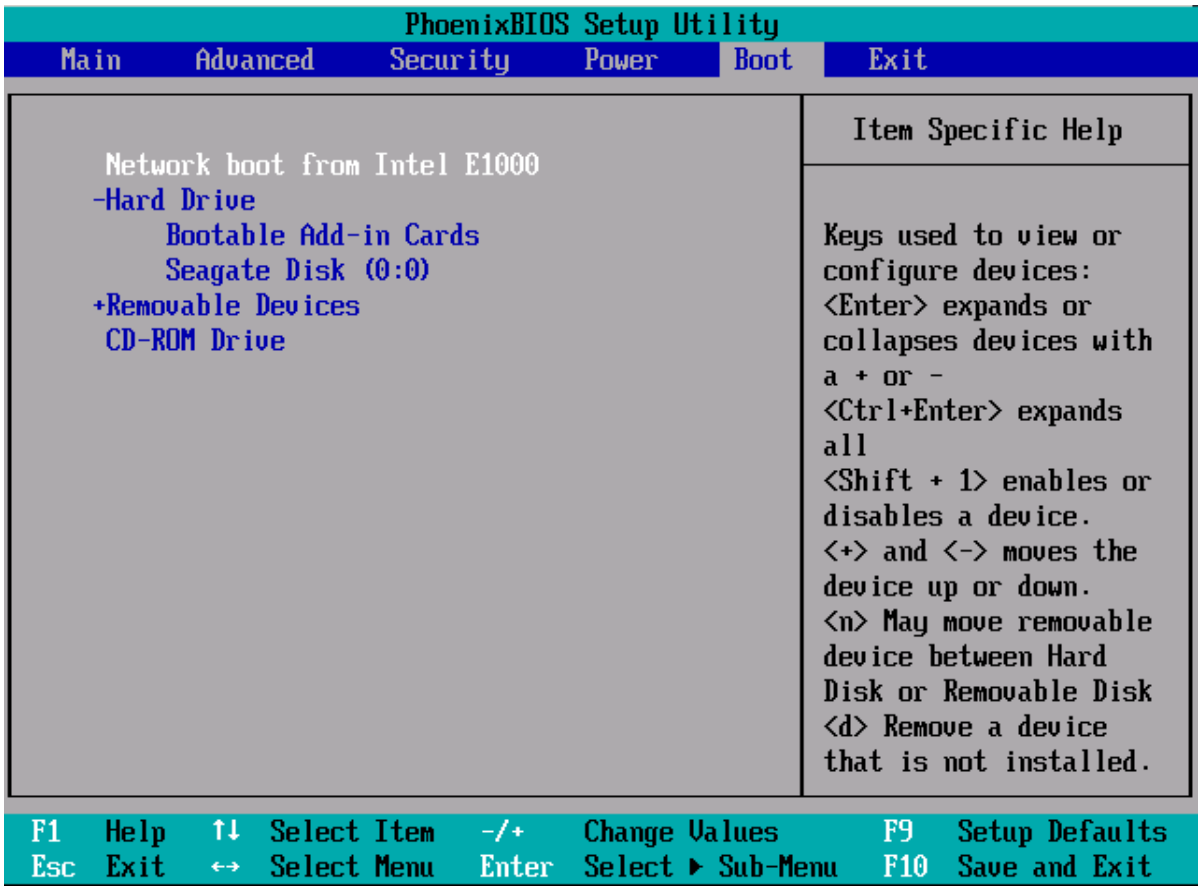
  -OR-

  You have to configure your router to forward DHCP requests to the NOC-PS appliance. This is

usually called “DHCP relaying” or “broadcast forwarding”

- The dedicated servers have to support network booting (PXE). Virtually all server grade mainboards and ethernet cards supports this, however this is not guaranteed to be the case with hardware meant for desktop systems.

- To be able to provision servers over the network, they have to be restarted. To automate this it is recommend that your servers are equiped with either an IPMI management card or connected to a switchable APC power distribution unit. Otherwise an engineer has to go on-site and restart the server manually.



- To tell the server to boot from network instead of disk, it is required that:

You modify the BIOS boot order, so that the system first attempts to boot from the network, before falling back to booting from hard drive.

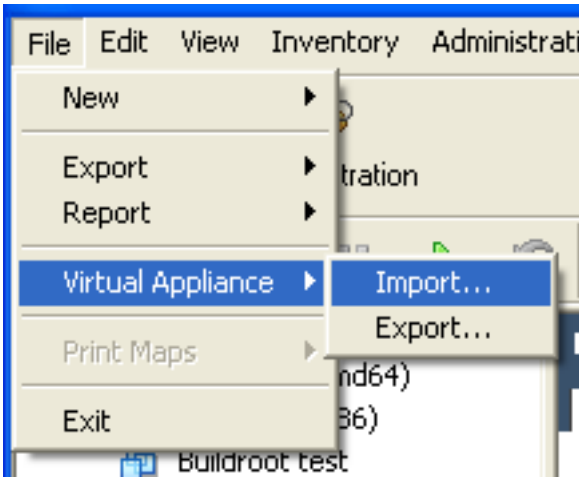
-OR-

Your system has to have an IPMI management card. In that case NOC-PS can instruct the server to boot from network automatically, without having to change the boot order manually.

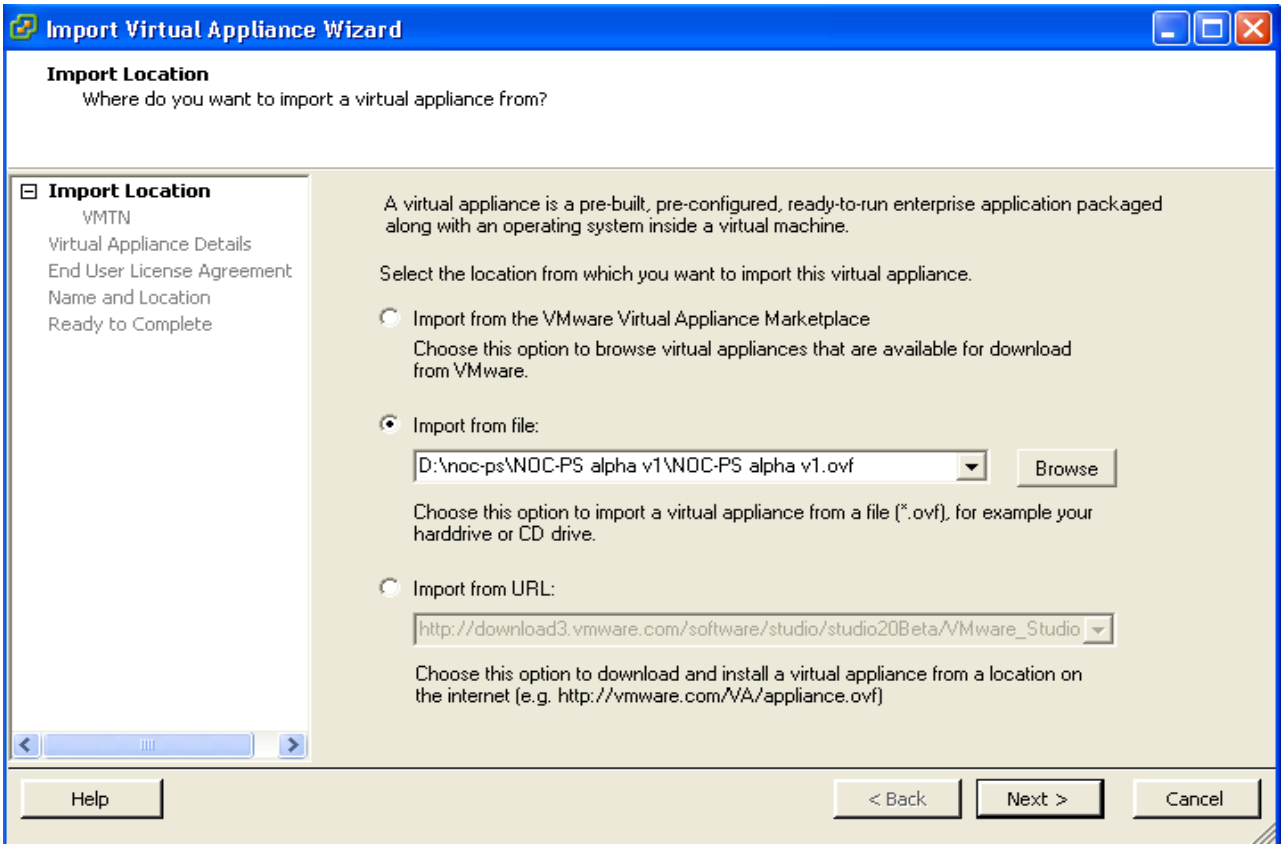
Installation under Vmware ESXi

To install the NOC-PS virtual appliance under Vmware ESXi:

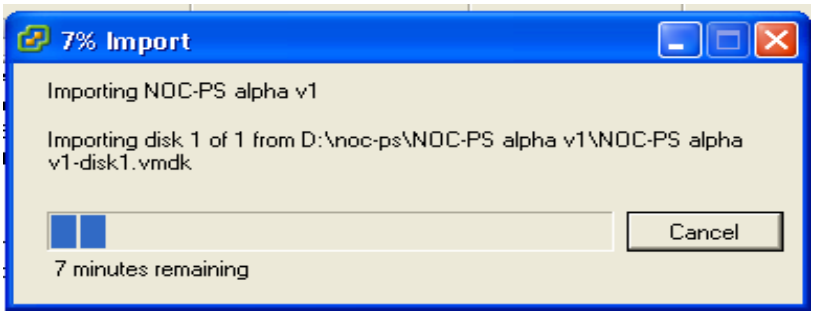
1) Download the .ZIP from the NOC-PS website, and extract it to a temporarily folder on your hard drive.



2) Start the “Vmware Infrastructure Manager”, and go to “File” → “Virtual Appliance” → “Import”



3) Choose “import from file”, browse to the folder where you extracted the files, and select the .ovf file.

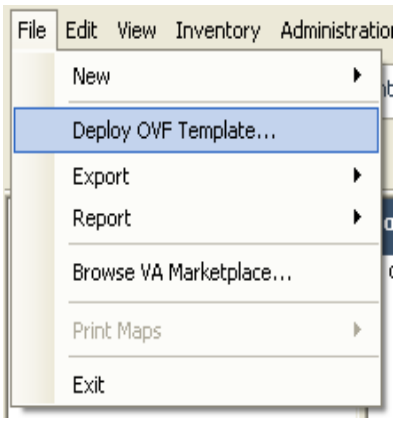


4) Choose “next” → “next” → “finish”, and wait for the upload to complete.

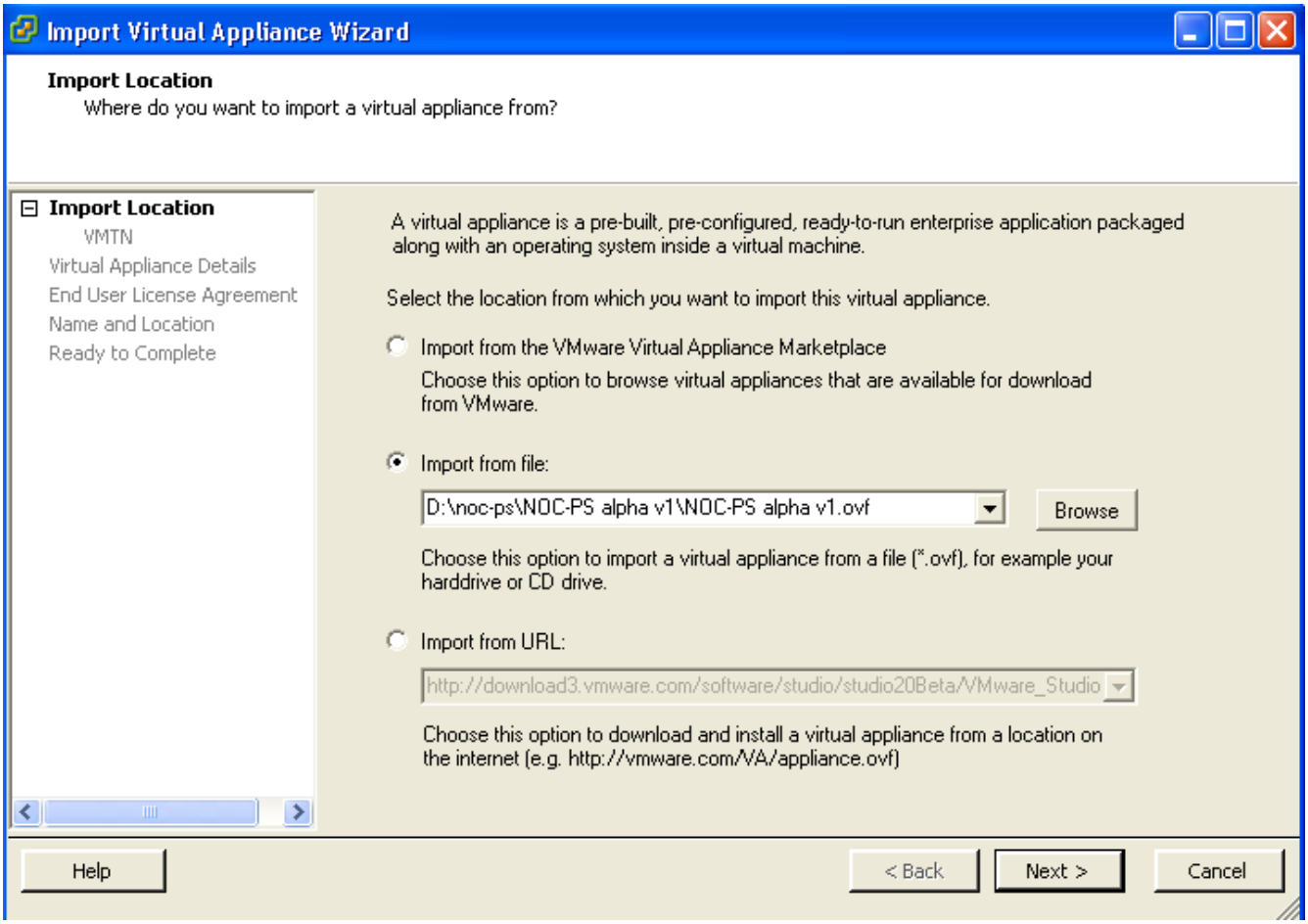
Installation under Vmware Vsphere 4

To install the NOC-PS virtual appliance under Vmware ESXi:

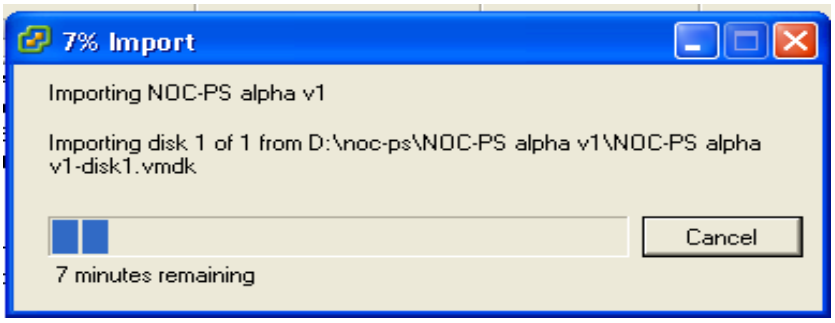
1) Download the .ZIP from the NOC-PS website, and extract it to a temporarily folder on your hard drive.



2) Start the “Vmware vSphere client”, and go to the menu “File” → “Deploy OVF template”



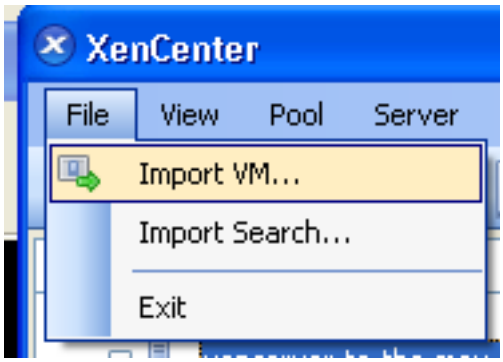
3) Choose “import from file”, browse to the folder where you extracted the files, and select the .ovf file.



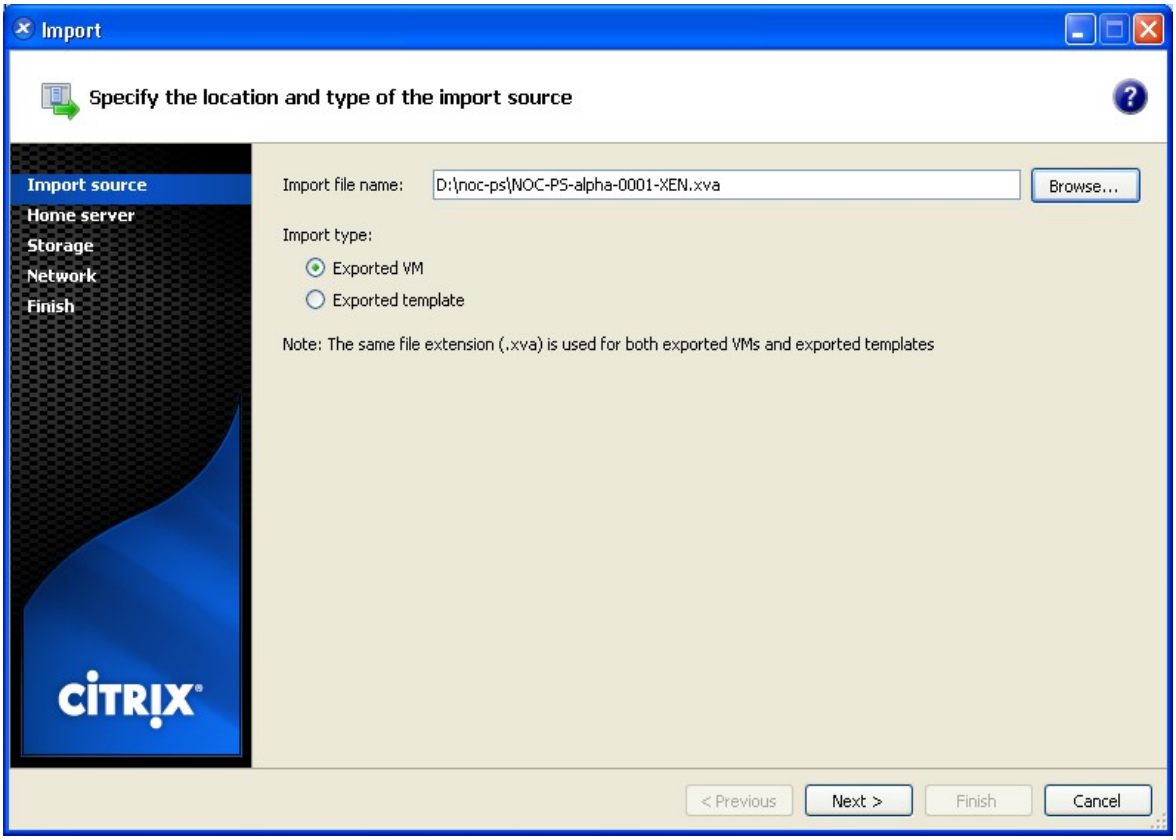
4) Choose “next” → “next” → “finish”, and wait for the upload to finish.

Installation under Citrix Xenserver

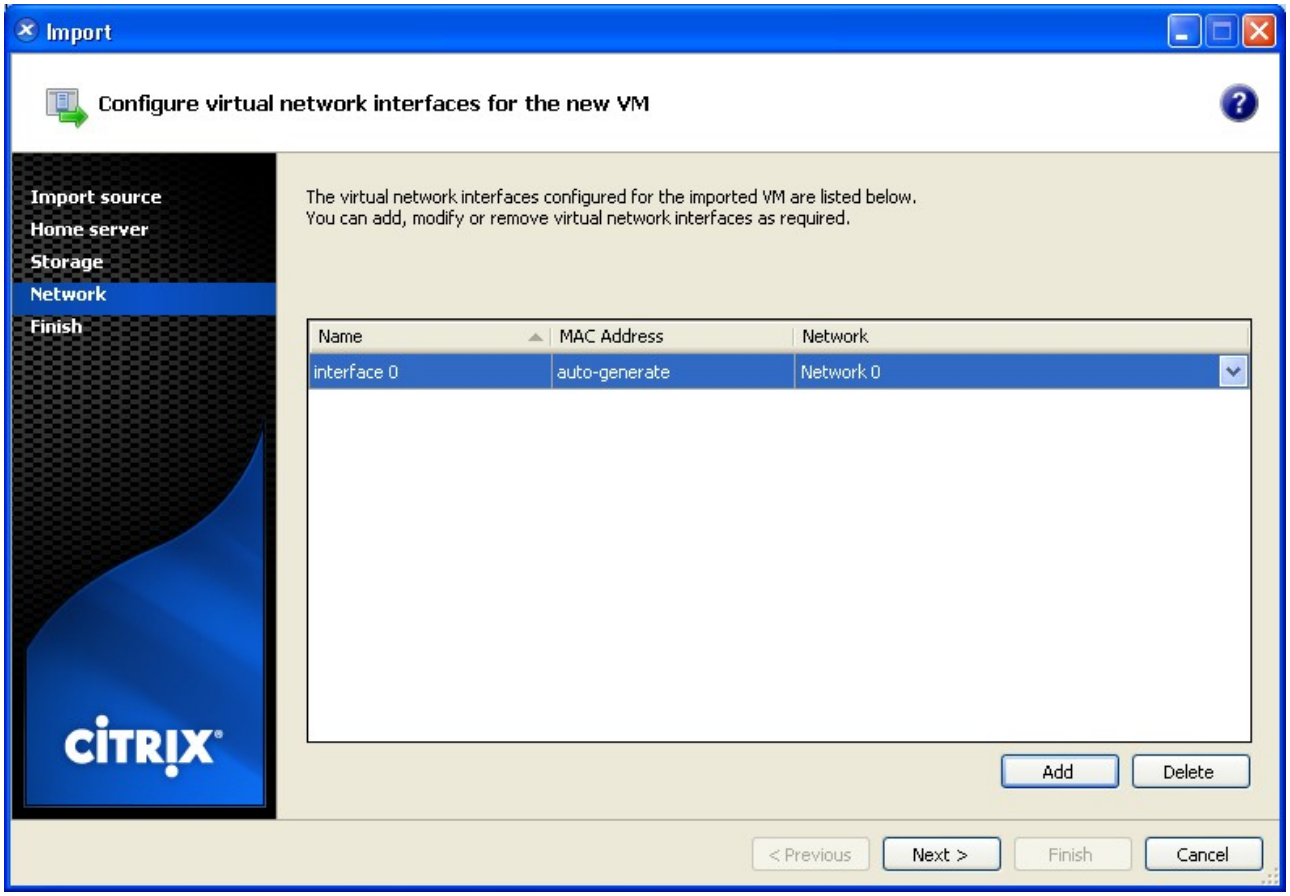
1) Download the .XVA bestand from the NOC-PS website.



2) Start “Xencenter” and go to “File” → “Import VM”



3) Browse to the downloaded .XVA file, and select the option “exported VM”, and click “next” → “next” → “next”



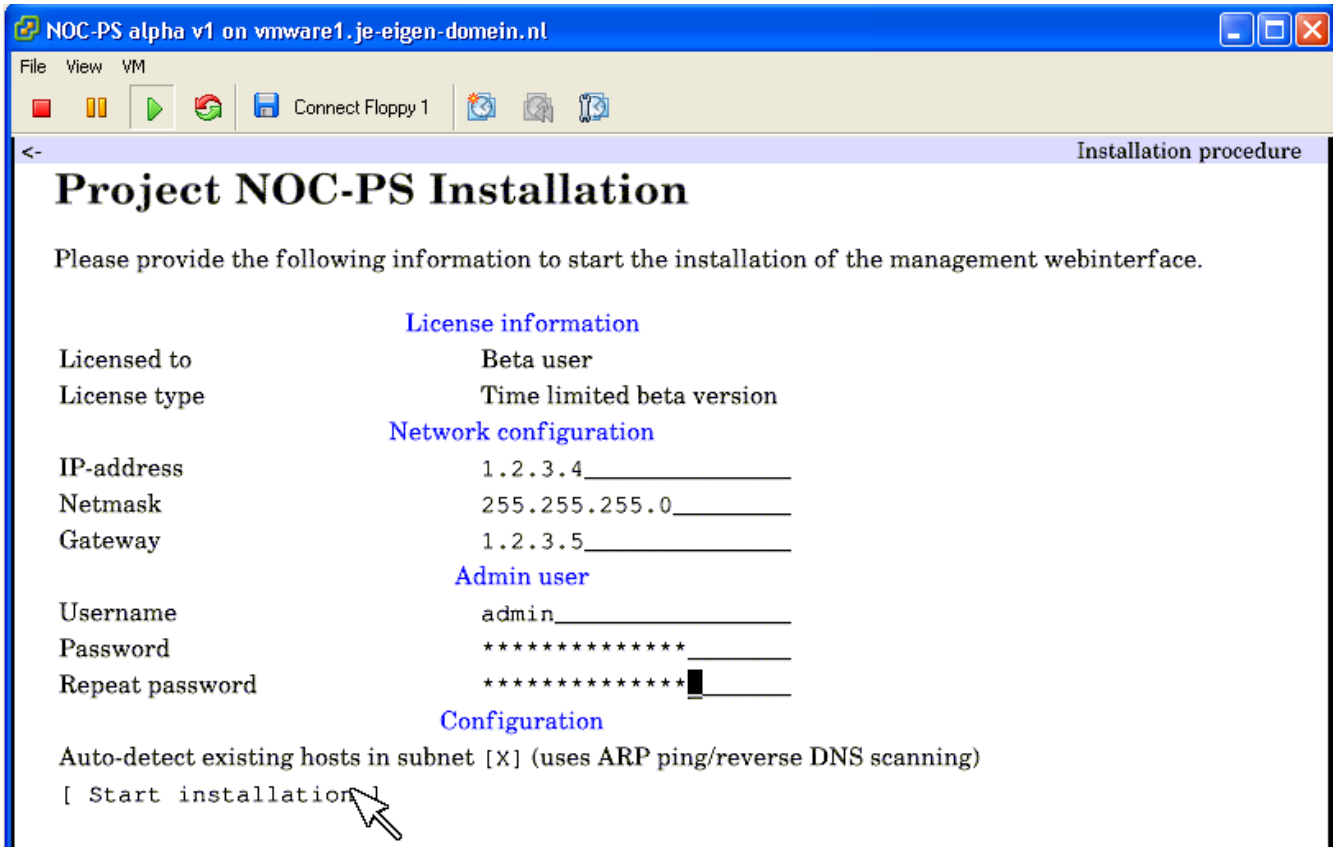
4) IMPORTANT: under “Configure virtual network interfaces for the new VM” add one virtual network card, by pressing “Add”

Press “next” -> “finish”, en wait until the upload is complete.

Initial configuration

After the software has been installed, you have to configure the network and login settings.

Go to your (Vmware/Xen) “console” and enter the information there. Depending on your hypervisor this window might look slightly different.

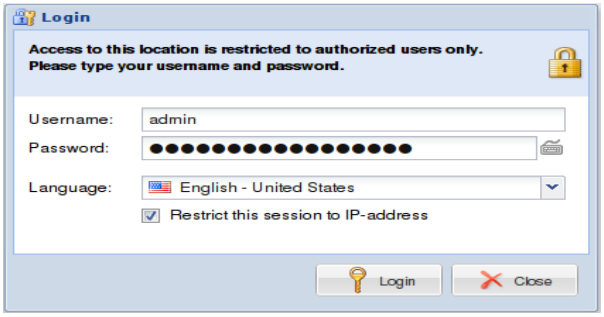


Enter the following information:

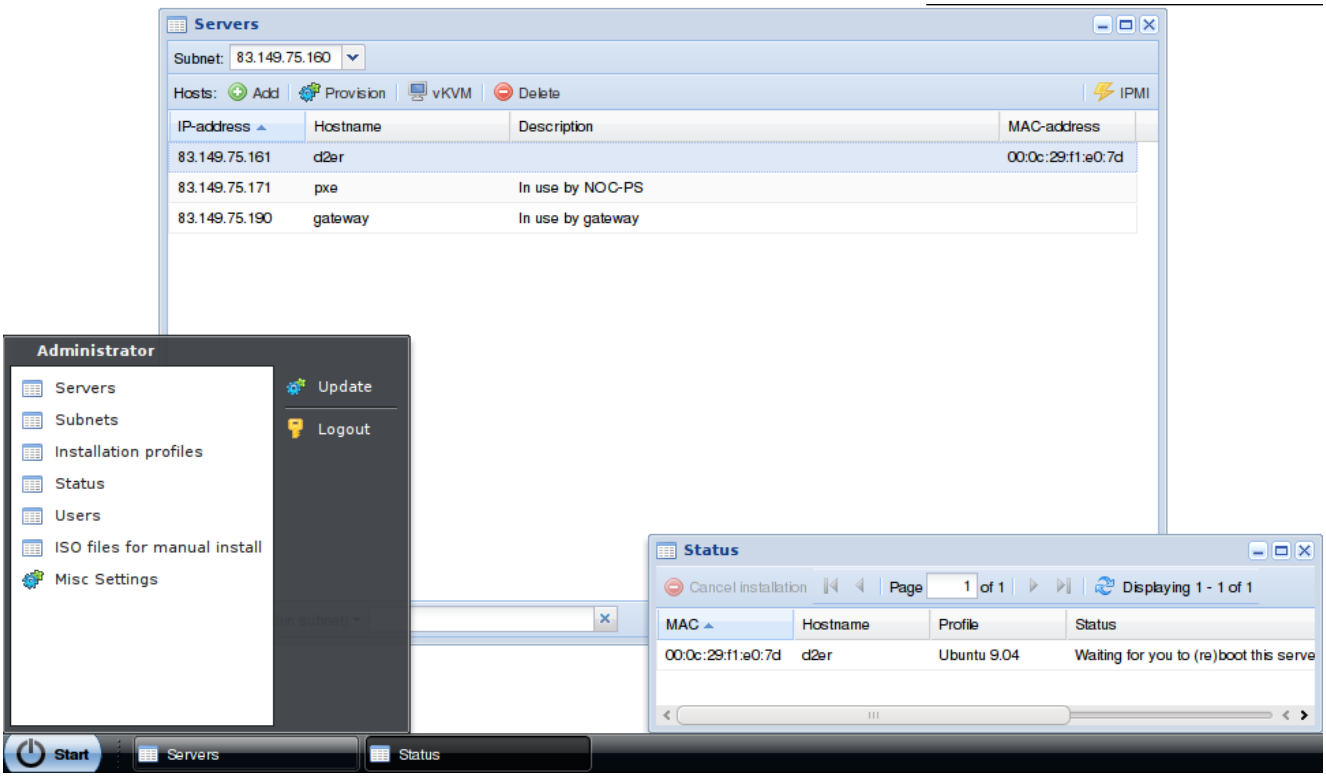
- IP-address, netmask, gateway: the IP-address and network information the NOC-PS software and web interface will use.
- Admin user: the desired administrative username and password. This is the information you use to login to the NOC-PS web interface.
- “Auto-detect existing hosts”: NOC-PS can optionally auto-detect existing servers in your network, so that it knows which IP-addresses are available and which are in use. Note: this works only for servers within the same VLAN.

Click on “start installation” to complete the configuration and start installation.

Overview of web interface



After installation has completed, go to the IP-address you specified during installation, with a normal web browser such as Firefox. You will be prompted for the username and password you specified earlier.



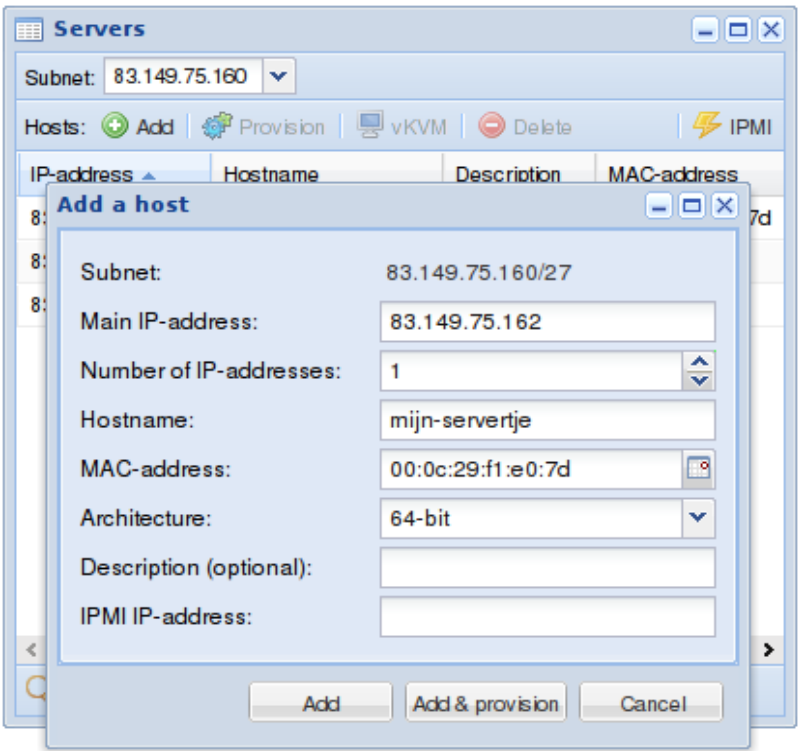
By default two windows are openend, “servers” and “status”. By clicking “start” on the bottom-left of the screen, a menu with the other options is presented.

Overview of the available menu options:

Servers	Provides an overview of all servers. By selecting a server and pressing the “provision” button, it is possible to install a new Operating System on the server.
Status	Provides a status overview of the server installations in progress.
Subnets	Can be used to configure additional subnets.
Installation profiles	Installation profile settings.
Users	Add and remove administrative users.
Misc settings	Configures default settings, and the SSL certificate of the web interface. Also has the ability to import/export server information.
ISO files for manual installation	ISO files for manually installation using the (virtual) KVM module.
Update	Updates the NOC-PS software to the latest version.

Adding new servers

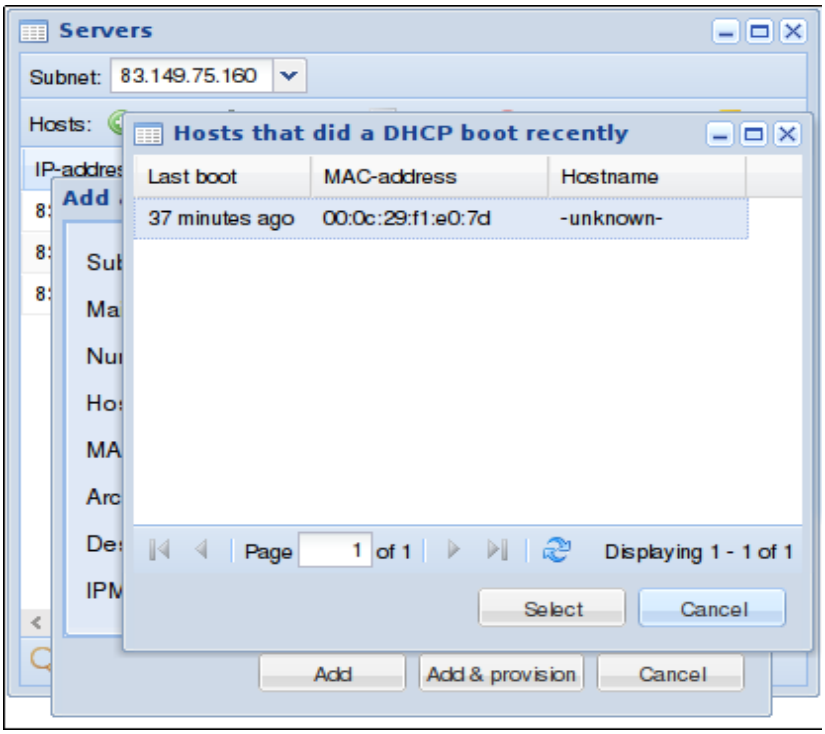
1) go to “start” → “servers”
2) next to “hosts” click “add”
3) add the following information:



- Main IP-address: the first IP-address of the server.
- Number of IP-addresses: the number of IP-address to assign to the server. Note: the IP-address must be numbered sequentally from the first IP.
- Hostname: the name of the server.
- MAC-address: the MAC-address of the server.

  Address unknown? Reboot the server, and click on the icon to the right of the MAC-address

input field.



A list of unknown servers that started recently will be presented.

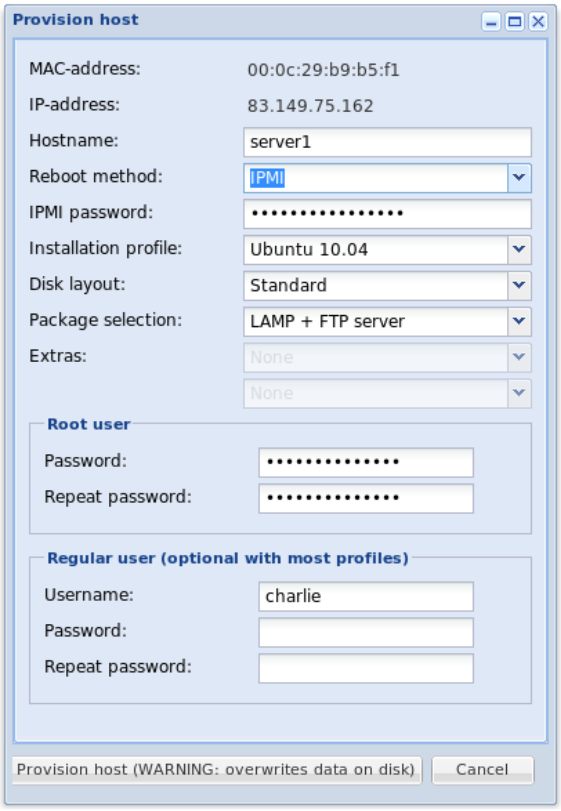
This does require that the server has been configured to attempt to boot from the network first (in the BIOS boot order, or using IPMI).

- Architecture: whether your prefer to install 32-bit or 64-bit operating systems on this server.
- Description: optional description of the server.
- IPMI IP-address: if your computer is equiped with an IPMI management card, enter its address here.
- IPMI username: IPMI username, for example “admin”. Note this is case-sensitive. And some manufacturers use “ADMIN” by default.

4) Click “add” to only add the server to the system for later use, or “add & provision” to install an operating system on the server straight away.

Automated server installations (provisioning)

1) go to “start” → “servers”
2) selectect the server you wish to install, and choose “provision”
3) enter the following information:



- Hostname: the current host name is displayed, which you can edit if desired.
- Reboot method: wheter you would like to use IPMI, an APC switching PDU to automatically reboot the system, or if you are going to do so manually.
- IPMI password: if you would like tell the server to reset and boot from network using IPMI, you need to enter your IPMI password here. For security reasons, passwords are NOT saved by default, and you have to enter them each time.
- Installation profile: the desired operating system.
- Disk layout, package selection and extras: select additions options here (“add-ons”). The available options differ by installation profile.

- Root user password / confirm password: enter the desired administrative (root) password twice.
- Regular user: in addition to creating an administrative (root) account, it is possible to add a “regular” user account as well. This is optional with most profiles.

4) click on “provision host”

5) restart the server. (this is done automatically if you selected “IPMI” or “APC PDU” as reboot method)

6) The installation will start automatically. You can monitor its progress in the “status” window.

Profiles

CentOS, Ubuntu, Fedora, Debian, FreeBSD:

A minimal Operating System is installed by default, with a static network configuration, a SSH daemon for remote management, and a local DNS server, so that it does not depend on other systems.

Additional software has to be installed manually, or must be added to the “installation profile” settings.

Sysrcd:

Using the “rescue system” you can solve boot issues, or reset forgotten root passwords.

The software will not be installed on the hard drive, but is executed over the network.

After activating the profile, you need to use SSH or VNC to connect to the IP-address of the server, using the supplied root password..

After you finished with the maintenance, press “cancel provisioning” in the “status” window, to end the session. After which you will need to restart the server.

vKVM console

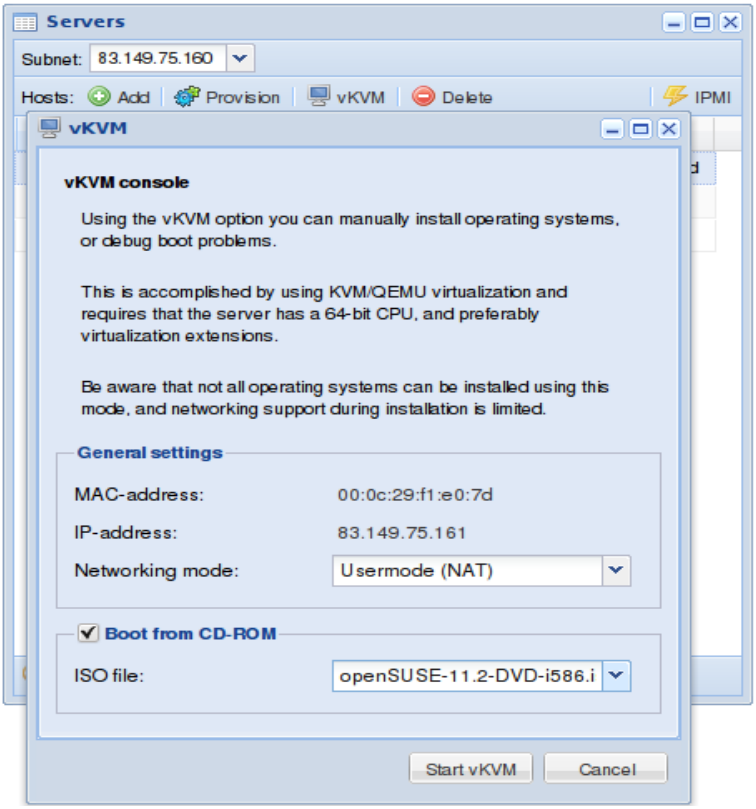
With the vKVM console you can manually install new Operating systems, or solve boot problems.

This works by starting the installation cd-rom under a virtual QEMU/KVM environement.

This requires a processor with support for 64-bit instructions, and preferably support for virtualization acceleration (otherwise performance will not be acceptable, and installation can take hours).

To activate the console:

1) Go to “start” → “servers”
2) Select the server, and click “vKVM”
3) Supply the following options:



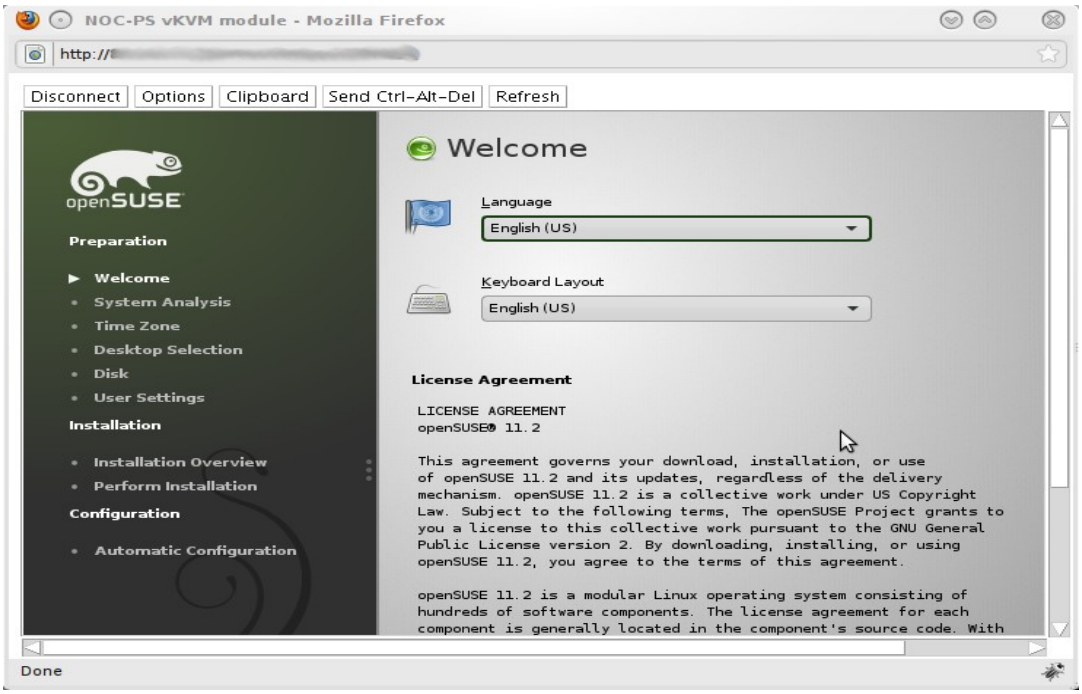
- Networking mode:

  “disabled”: No network access is allowed during the session.

  “usermode”: Only outgoing connections are possible. To use the network the guest operating system has to be configured to use DHCP temporarily.

- “Boot from CD” / ISO file: if you want to install a new operating system, select the ISO file here.

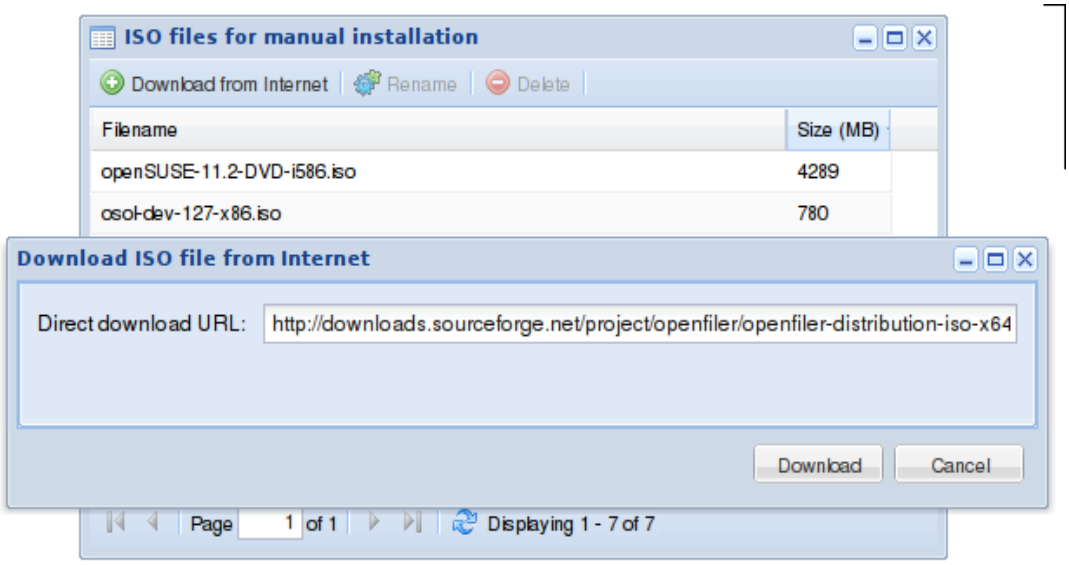
4) Restart the server.



5) A graphical console will be presented. Using this you can complete the installation procedure manually.

NOTE: vKVM support is an experimental feature included with NOC-PS free of charge. Be aware that not every operating system can be installed under this mode. No official support will be provided on this functionality at this time.

Adding additional ISO files



To add extra ISO files (for manual installations using the vKVM console only):

1) Go to “start” → “ISO files for manual install”

2) Click “Download from Internet”

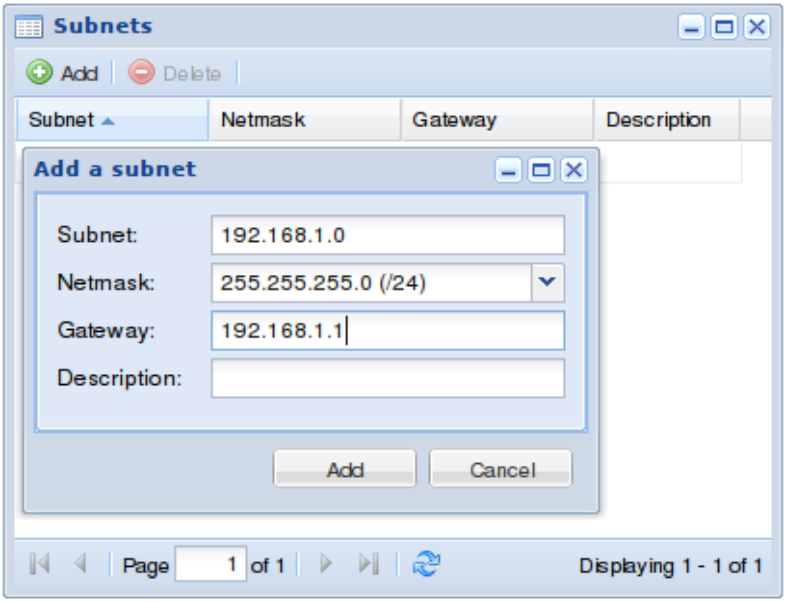
3) Enter the exact download location. HTTP locations are prefered above FTP.

4) Press “download”

NOTE: vKVM support is an experimental feature included with NOC-PS free of charge. Be aware that not every operating system can be installed under this mode. No official support will be provided on this functionality at this time.

Adding additional subnets

To add additional subnets to the system:



1) go to “start” → “subnets”.
2) click on “add”
3) enter the network IP-address, the “netmask and “gateway” and click “add”

Notice: if the “subnet” resides in another VLAN, you have to configure your router to use DHCP relaying, to forward DHCP requests to the NOC-PS system.

Most datacenter-grade routers support this, but it is something you do need to configure manually.

Adding Windows support

NOC-PS provides support for Windows server 2008 (and later).

However due to licensing issues we cannot ship the necessary installation files, with the NOC-PS software.

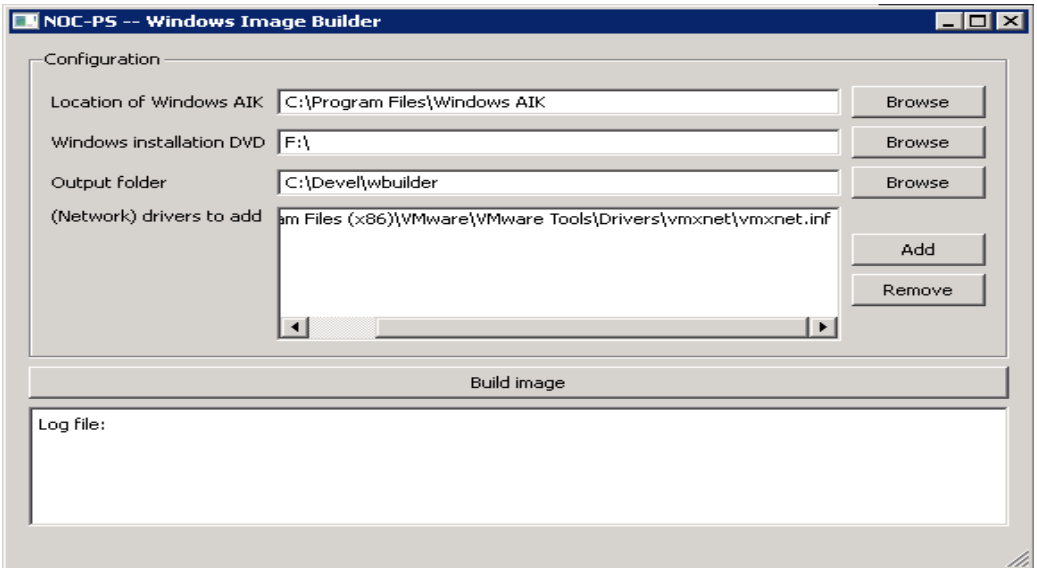
To add Windows support, you need to create a custom installation image yourself:

- Download and install the Microsoft Windows 7 AIK on your own computer:

  http://www.microsoft.com/downloads/details.aspx?displaylang=en&FamilyID=696dd665-9f76-4177-a811-39c26d3b3b34

- Insert the Windows installation DVD in the DVD drive of your own computer.

- Download the NOC-PS Windows image builder .zip file, and extract it to a folder on your hard drive.



- Start nocps-winimagebuilder.exe and enter:
  - Location of Windows AIK: location where you installed the Windows AIK.
  - Windows installation DVD: the DVD drive letter that has your Windows installation DVD.
  - Output folder: the folder where the generated image will be saved. Make sure it has at least 4 GB of free space.
- Click on “build image”

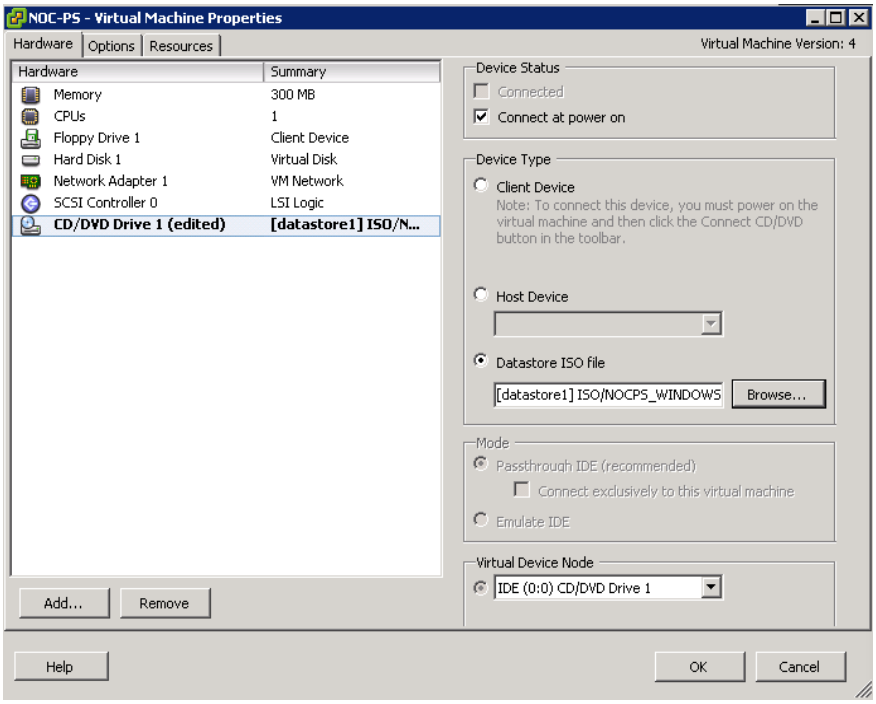
The “image” created is an ISO file, that has to be transported to the NOC-PS system.

You can either:

- Upload it to Hypervisor (e.g. VMware)

OR

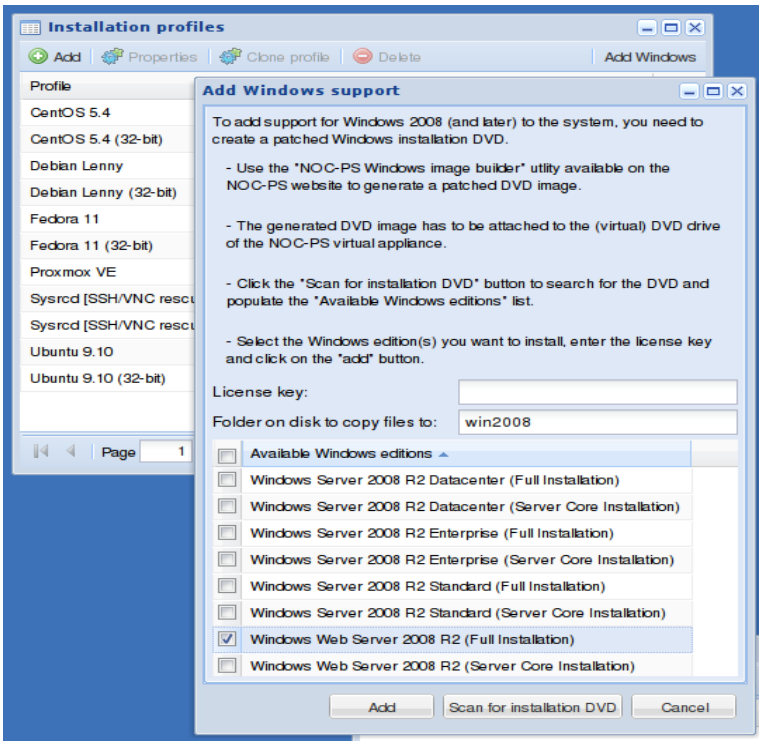
- Burn it to DVD and put the DVD in the Hypervisor server.



Assign the DVD to the virtual machine running the NOC-PS software.

(Vmware: under “Vmware virtual machine properties”: “add” → “CD/DVD drive”)

Tell NOC-PS to copy the files from the ISO image:



- Go to “Start” → “Profiles”
- Click on “Add windows”
- Enter your license number, select the Windows editions you would like to add, and click on “Add”

  Alternatively: you can leave the license number field blank, and add the license numbers manually to the provisioned servers after installation.

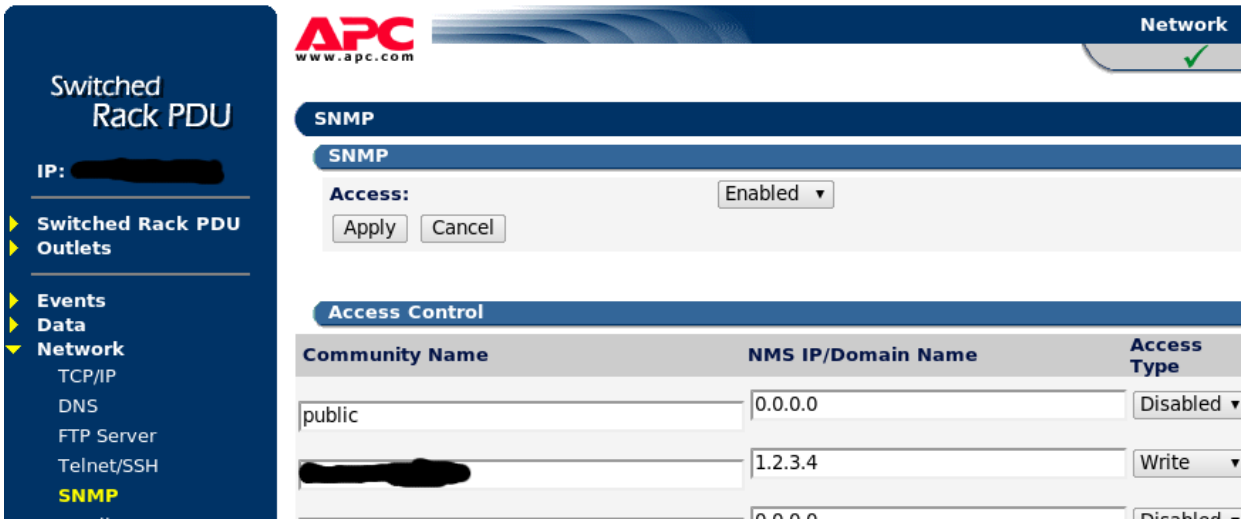
Limitations:

- It is possibel to add multiple Windows editions, but those have to be of the same architecture. Either all editions have to be 32-bit, or all have to be 64-bit.
- The hardware of your servers should be supported out-of-the-box by Windows. Adding additional drivers is not guaranteed to work in all cases.

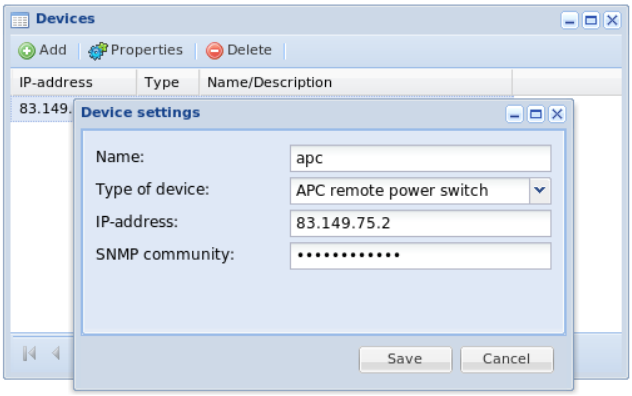
Support for APC switching PDUs

It is possible to automatically reboot systems using an APC switching Power Distribution Unit, which can turn the power of the system, off and on again.

First you need to configure SNMP access in the webinterface of your APC PDU:

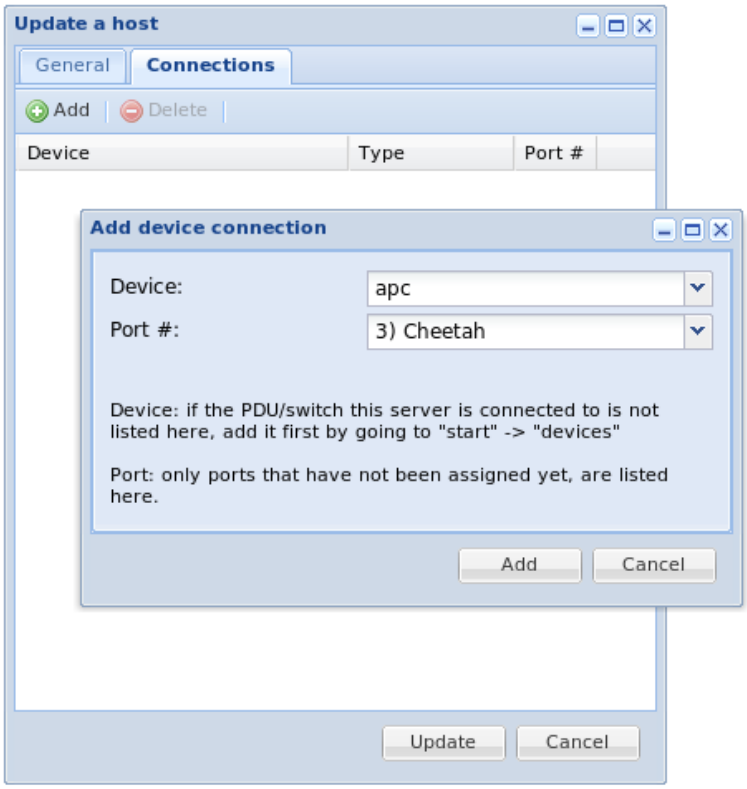


1) Go to “Network” → “SNMP”. Make sure “access” is “Enabled”
2) Under “access control” in the same window, enter a secret community name, the IP-address of the NOC-PS appliance, and select “access type” “write” or “write+”. Now “apply” the configuration.



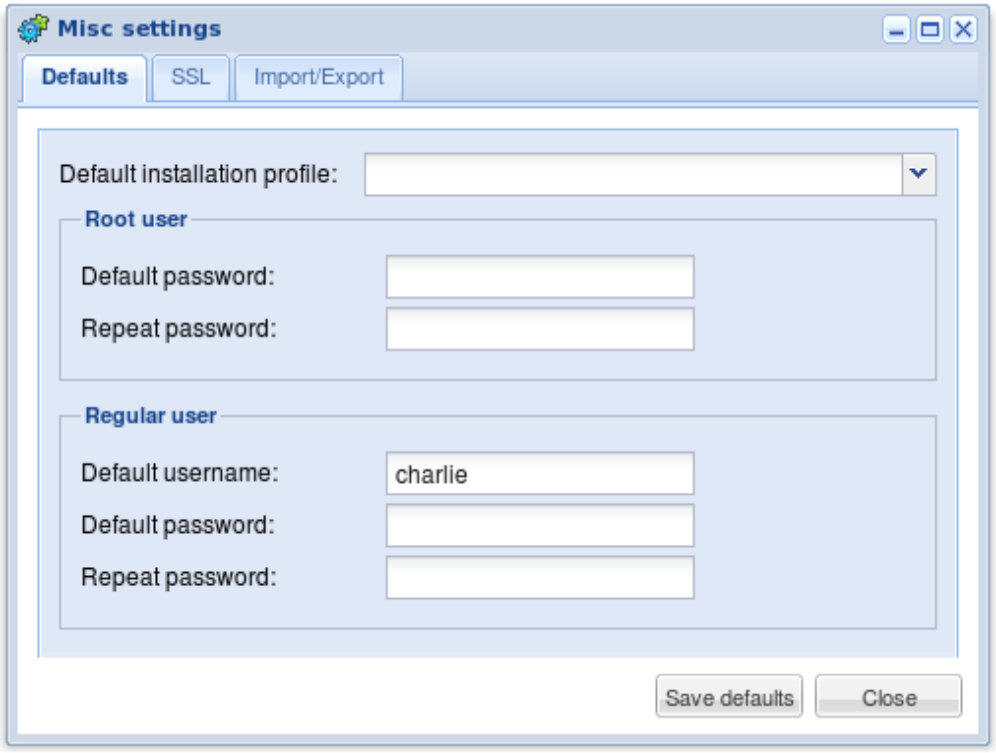
3) In the NOC-PS interface, go to “start” → “devices”, and press “add”. Enter a friendly name for your device (e.g. “APC unit 123”), “APC remote power switch” as type, the IP-address of the device, and the secret community name. Finish by pressing “save”

You now need to assign the ports of the power switch to individual servers:



- Go to “start” → “servers”. Select an individual server, and press “properties”
- Under the tab “Connections”, click on “Add”. Select the device from the list, and choose the port number.

Entering default settings

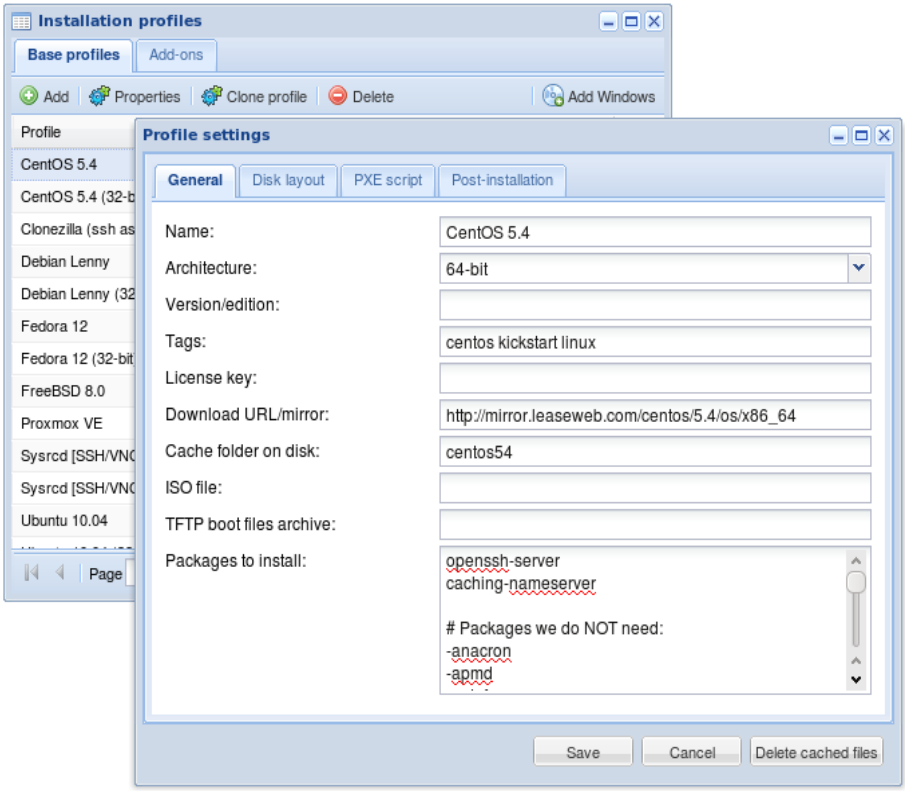


Go to “start” → “misc settings”

Under the tab “defaults” enter the desired default settings.

Profile settings

To change the profile settings:



1) Go to “start” → “profiles
2) Select the profile you wish to update and select “properties”

The following information is listed here:

Name	Name of profile
Architecture	Meant for 32-bit or 64-bit systems.
Version/edition	If an operating system has multiple editions, the desired edition is

	entered here.
Tags	Tags seperated by spaces. Tags are used to determinate which add-ons are related to this profile.
License key	License key (if necessary)
Download URL/mirror	Location where the installation files of the operating system can be found.
Cache folder on disk	Folder on disk where the installation files will be cached. Using the button “delete cached files” you can delete stale files.
ISO file	If a location of an ISO file is supplied. The file will be downloaded, extracted and its contents placed in the cache folder.
TFTP boot files archive	If a location of an archive file (for example .tar.gz) is supplied, its contents will be extracted in the TFTP boot folder.
Packages to install	Which software packages to install.
Tab “disk layout”	Partition layout. Format is specific to each operating system.
Tab “PXE script”	PXE boot script. You can enter specialized kernel parameters here.
Tab “post-installation”	Post-installation script that is executed after installation.

Adding and cloning profiles

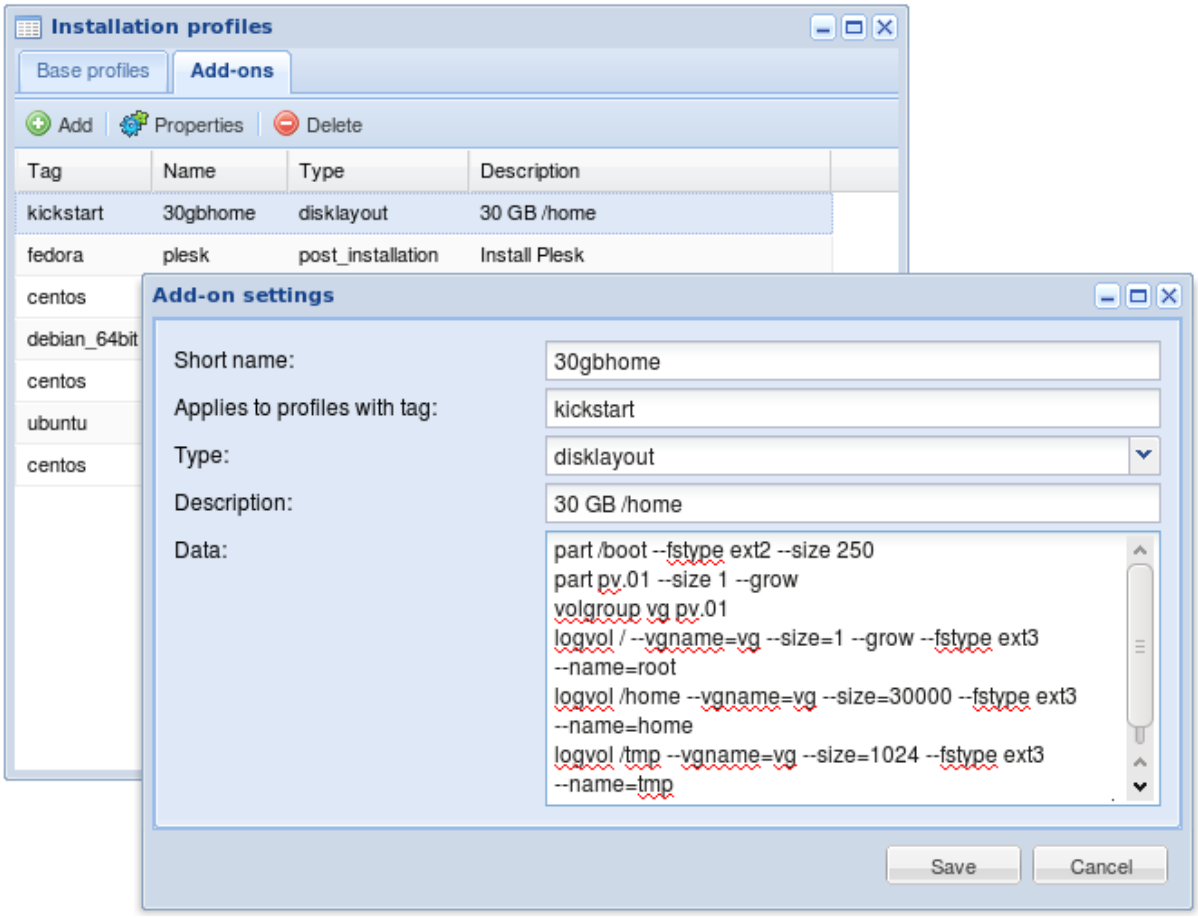
To create a new profile, click “add”.

To base your new profile on an existing profile, click “clone”.

Add-ons

Instead of creating an entire new profile, it is also possible to add small optional modifications to an existing profile, using add-ons.

For example you can use add-ons to specify a custom disk layout, or a post-installation script that installs additional software.



Creating “add-ons” is done under the tab “add-ons” in the window “profiles”

Each add-on is associated with a tag, to determinate to which profiles it is related. E.g. by using the tag “linux” the system knows this add-on applies to all Linux distributions.

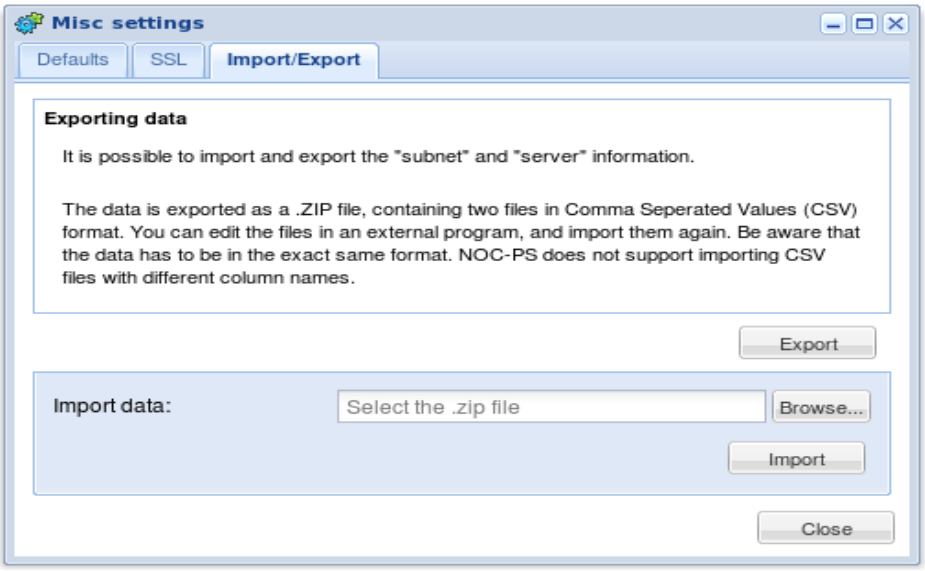
Using the tag “kickstart” it only applies to distributions that support the “kickstart” installation mechanism, such as CentOS, Fedora or Ubuntu.

Import existing data

There are two ways to mass import existing server information.

Export data, edit it, and import it again

It is possible to export subnet- and server information, edit it in your favorite spreadsheet program and import it again.



1) Go to “start” → “misc settings”
2) Under the tab “import/export”, you find an “export” button.

This will provide you with a .zip file, containing two data files in Comma Seperated Values (csv) format. One for the subnets, and one for the servers.

You can extract the files, edit them, zip them again, and import them again.

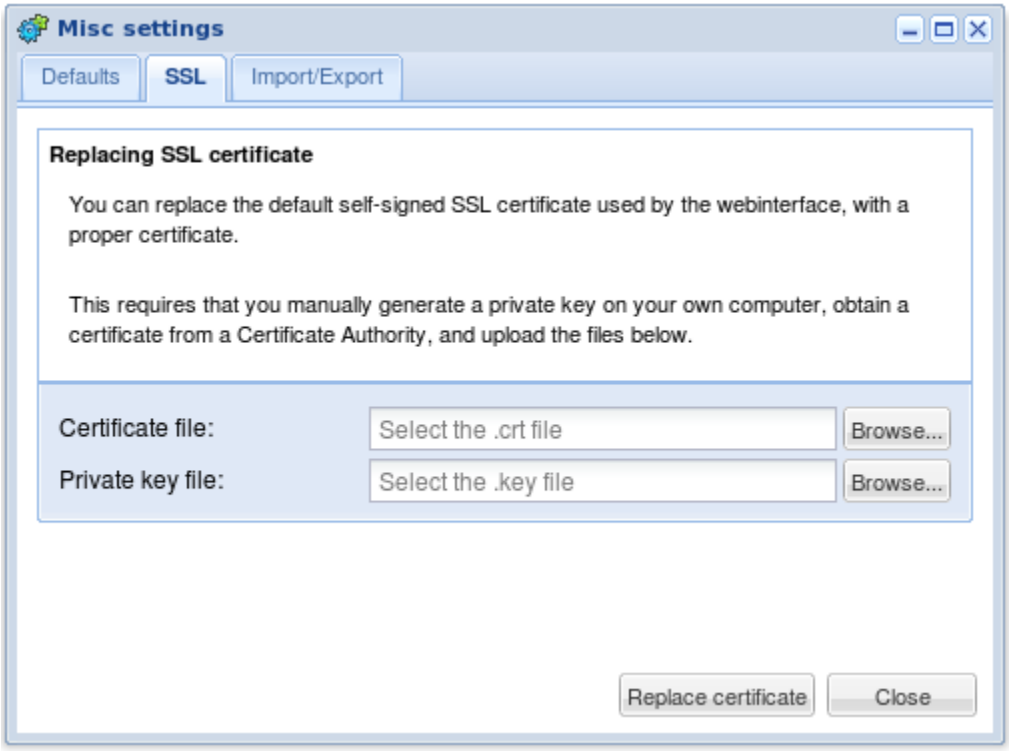
Import data from external system or database.

If the import/export functionality is not flexible enough for your situation, you can integrate the NOC-PS system with your own software using the XML-RPC API.

PHP examples can be found on the NOC-PS website, under “downloads”

Install SSL certificate

You can add a proper SSL certificate to the NOC-PS webinterface.



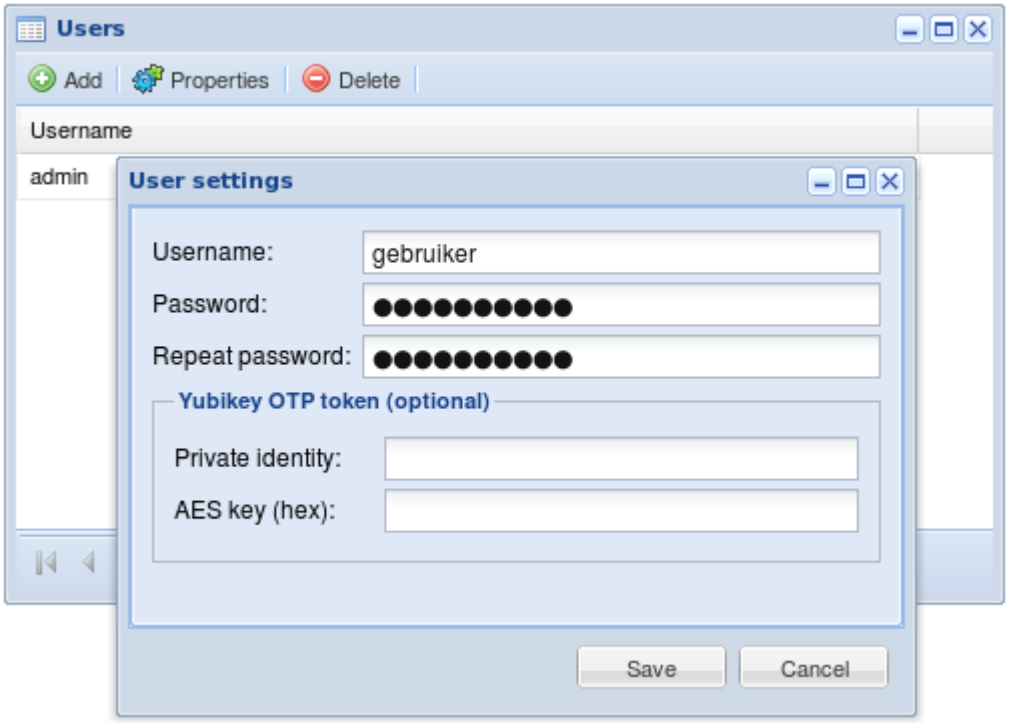
1) Go to “start” → “Misc settings”
2) Go to the tab “SSL”, and upload both a private key and certificate file

Instructions to create a private key on your own computer, and request a certificate: http://wiki.je-eigen-domein.nl/doku.php?id=het_aanmaken_van_een_csr_voor_apache_mod_ssl_zonder_control_panel

Only single-root certificates are supported at this moment (e.g. RapidSSL)

Creating users

You can give multiple users access to the system.



1) Go to “start” → “users”
2) Click “add” and enter the requested username and password.

Warning: all users have full administrative rights.

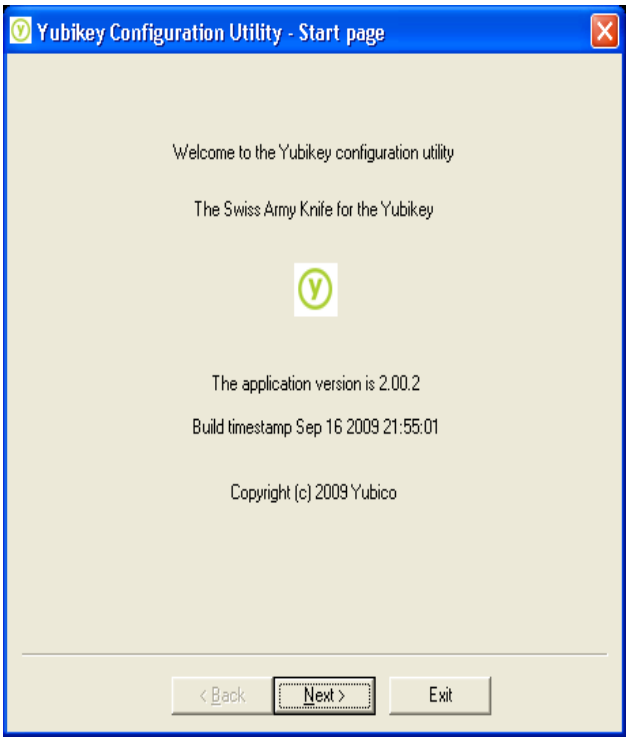
Currently it is not possible to limit users to certain systems. Use your own software and the API for this.

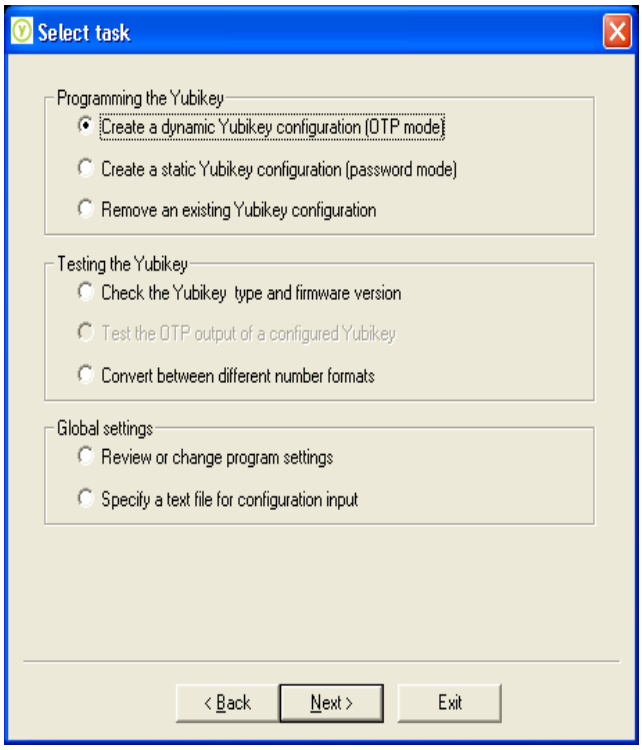
Programming and configuring Yubikey OTP tokens

For additional security it is possible to require the use of Yubikey OTP tokens in addition to normal password authentication.

First you need to program a shared secret into the Yubikey configration Utility.

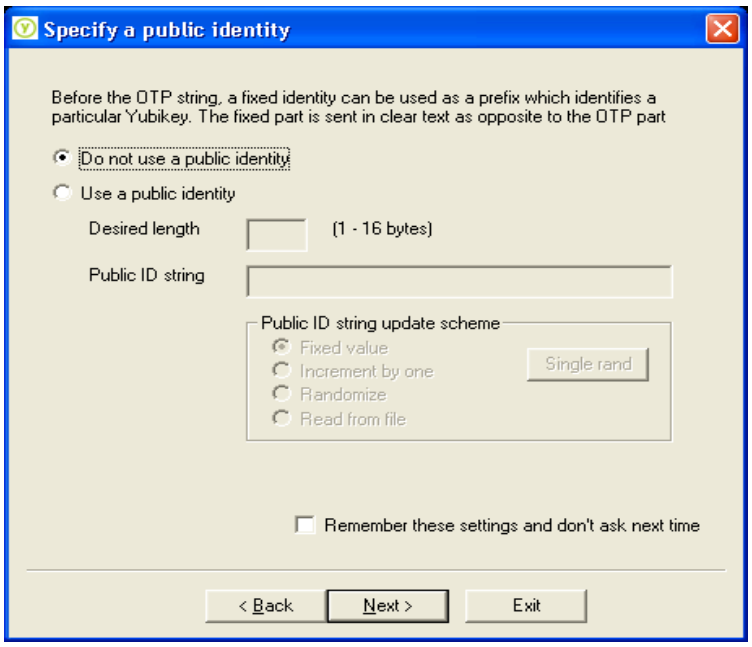
1) Download and install the Yubikey configuration utility:
   http://www.yubico.com/developers/personalization/



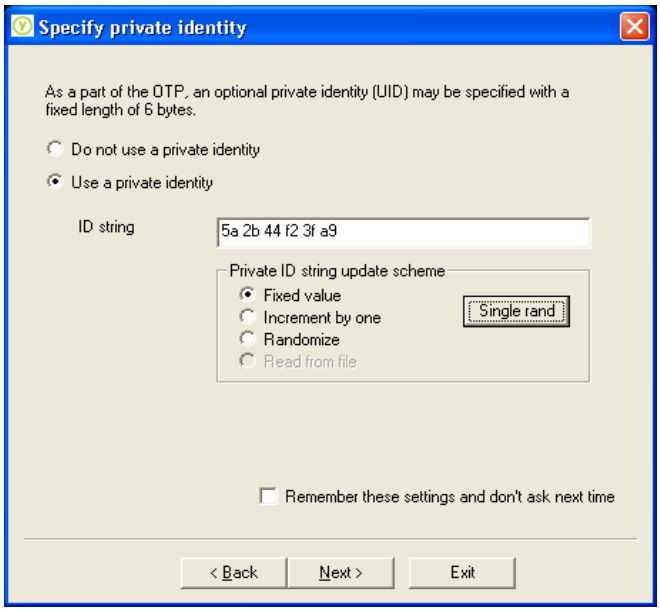


2) Start the configuration utility, and click “next”

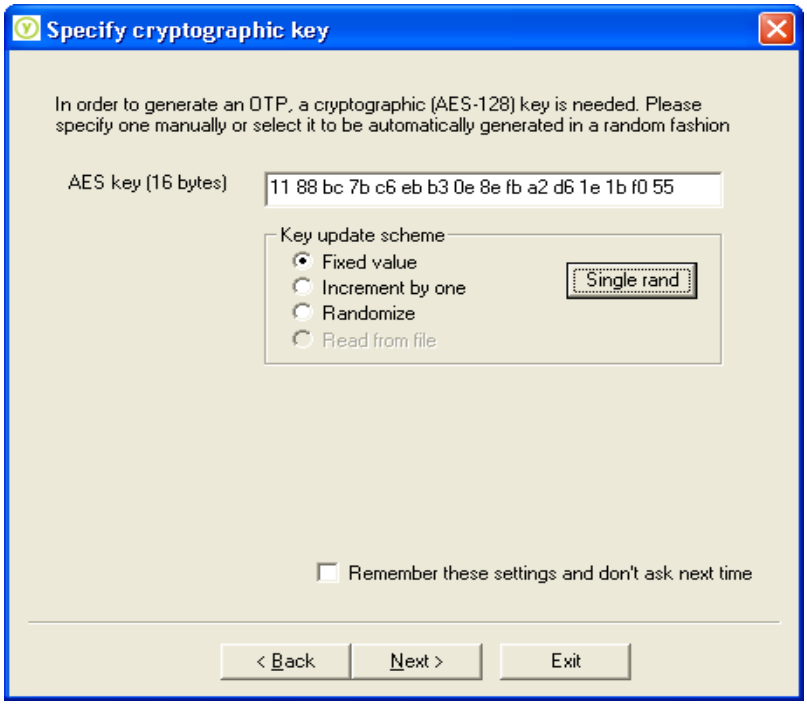
3) Choose “create a dynamic Yubikey configuration (OTP mode)” and click “next”



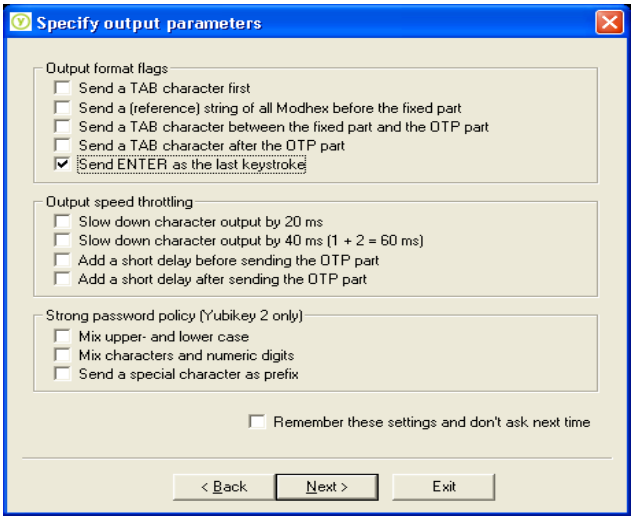
4) Choose “do not use a public identity” and click “next”



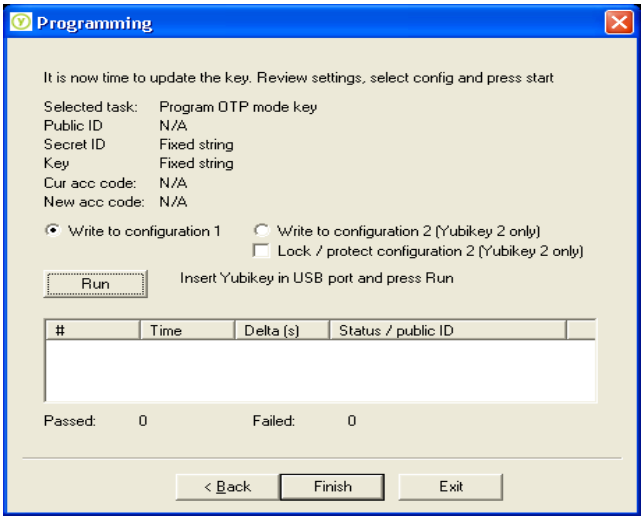
5) Choose “use a private identity”, select “fixed value” and press “single rand” to get a random value. Copy or write down the “ID string” (in this example: 5a 2b 44 f2 3f a9), and click “Next”



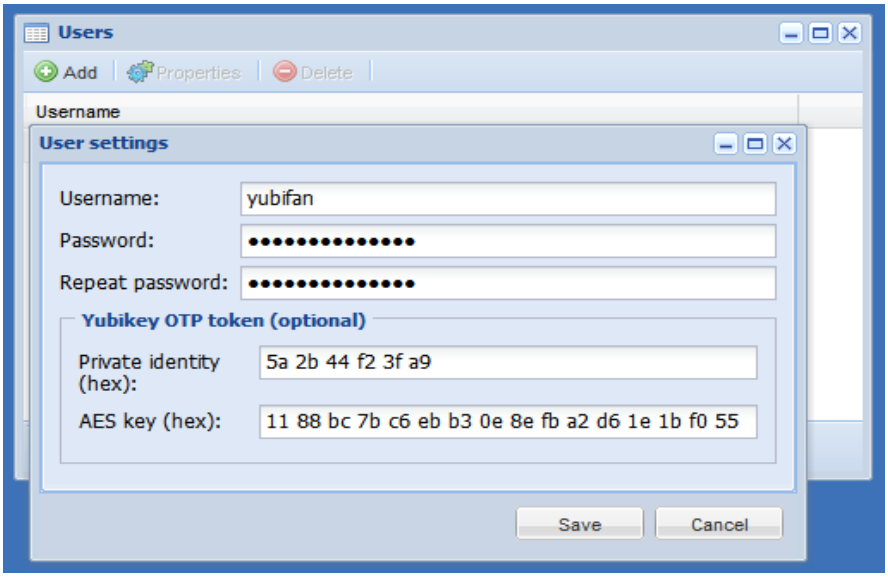
6) Select “key update scheme” “fixed value” and click “single rand” to configure a random key. Copy or write down the “AES key”, and click “next”



7) In the output parameters select “Send ENTER as the last keystroke” → “Next”



7) Press the “run” button to program the token.



8) In the NOC-PS control panel, go to “Start” → “Users”. Select a user, and click on “properties” to edit the settings, and enter the private identity and AES key you wrote down.

Logging in with Yubikey

From now on, you will have to use the Yubikey to login.
First you enter your username and password as usual.

And then you press the button on the Yubikey OTP token, when prompted, to complete sign-in.