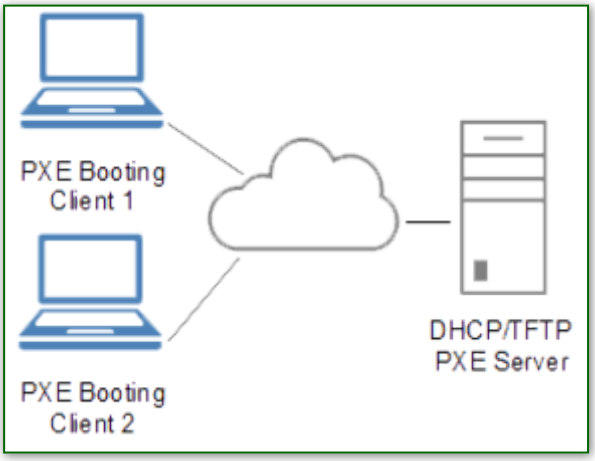
Tutorial Linux PXE on Windows Deployment Services

Windows Deployment Services (WDS) is a server technology from Microsoft for network-based installation of Windows operating systems. It is the successor to Remote Installation Services. WDS is intended to be used for remotely deploying Windows Vista, Windows 7, Windows 8, Windows Server 2008, and Windows Server 2012, but also supports other operating systems because unlike its predecessor RIS, which was a method of automating the installation process, WDS uses disk imaging, in particular the Windows Imaging Format (WIM). WDS is included as a Server Role in all 32-bit and 64-bit versions of Windows Server 2008, and is included as an optionally installable component with Windows Server 2003 Service Pack 2. (source wikipedia)
In this tutorial Windows 2012 server is used, but the concept stay the same on older version.

Requirement

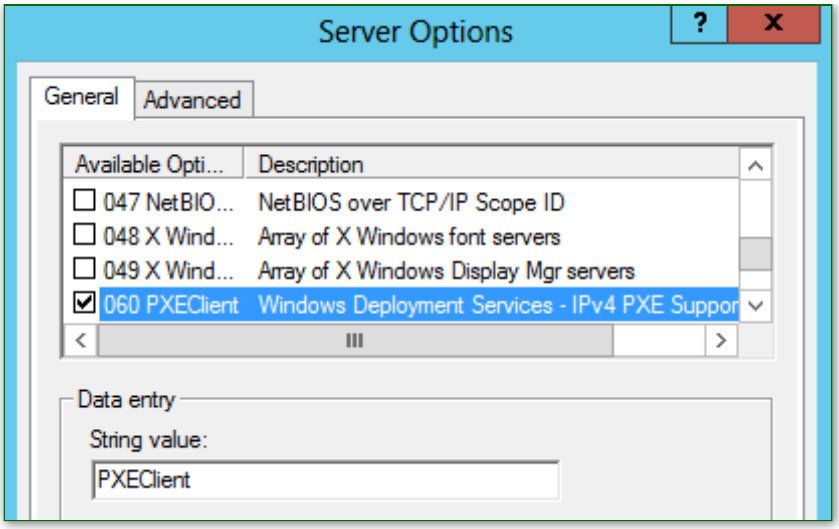
WDS is using Preboot eXecution Environment (PXE)

In computing, the Preboot eXecution Environment (PXE, sometimes pronounced as pixie) specification describes a standardized client-server environment that boots a software assembly, retrieved from a network, on PXE-enabled clients. On the client side it requires only a PXE-capable network interface controller (NIC), and uses a small set of industry-standard network protocols such as DHCP and TFTP (source wikipedia).



WDS require DHCP & TFTP

In order to have WDS operational, you need first to install and configure a DHCP server with TFTP (this part is not shown in this tutorial)
TFTP is included in Windows DHCP, you just need to enable PXE Client in DHCP console in server options.

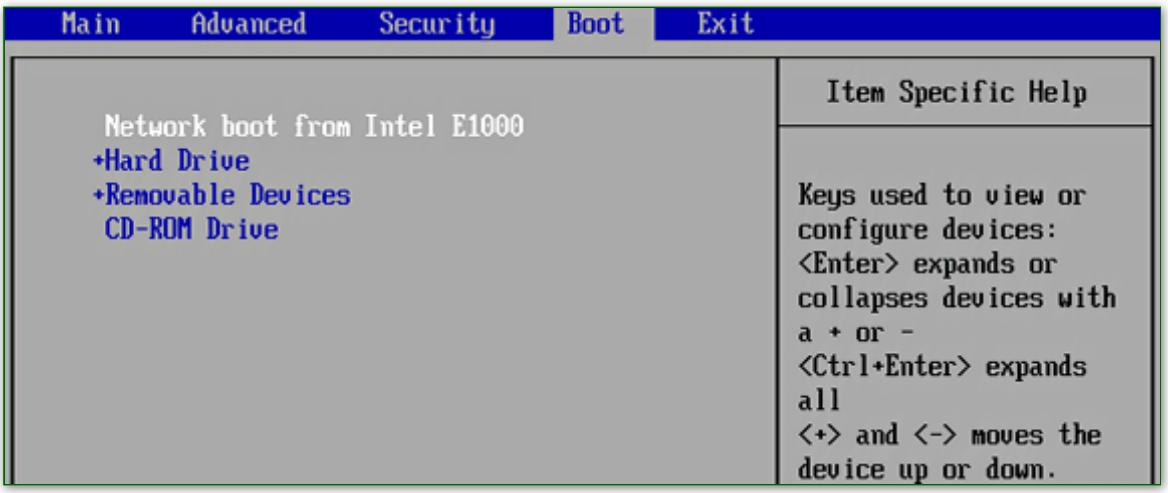


Client requirement

- Clients require at least 256 Mo of RAM & a network card.
- Client Computer require Network booting option.

Network booting, shortened netboot, is the process of booting a computer from a network rather than a local drive. This method of booting can be used by routers, diskless workstations and centrally managed computers (thin clients) such as public computers at libraries and schools. (source wikipedia)
To enable Network booting on client computer you have (in most of case) to configure it in the BIOS

1. To enter in the BIOS you need to hit a specific key at the computer power up (most of the time the key is F1,F2 or DEL, some BIOS display a splash screen and you will need to use ESC key to see BIOS keys options)
2. Enable network booting in the BIOS (some BIOS have this option set as disable by default and some other have it enable by default sithout possibility to disable it)
3. Configure boot order, set network boot as first bootable device



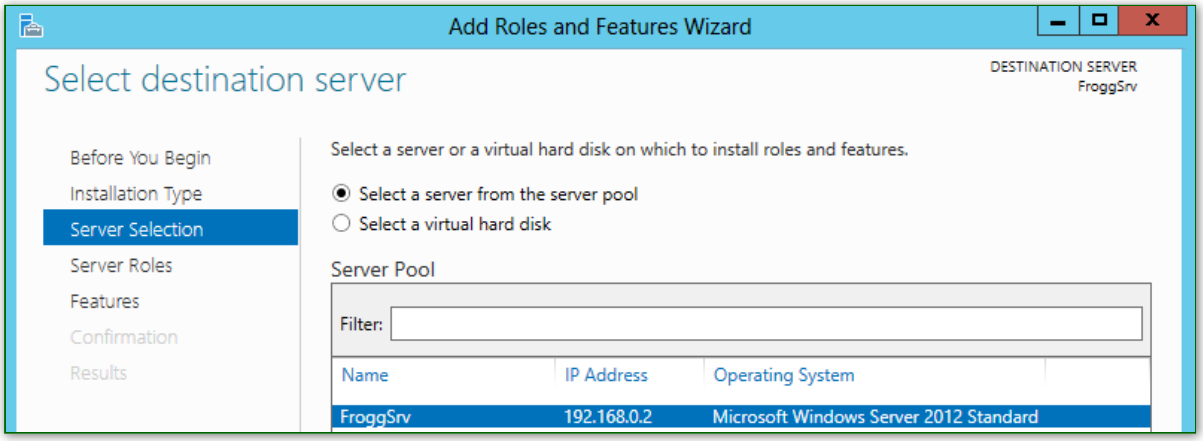
Note 1 :
Some network card (most of the time really old and low cost card) don't have network boot option. In this case Network booting is impossible without changing the network card.

Note 2 :
Some BIOS (most of the time really old and low cost motherboard) don't have network boot option. In this case you can try to update BIOS or give up with it !

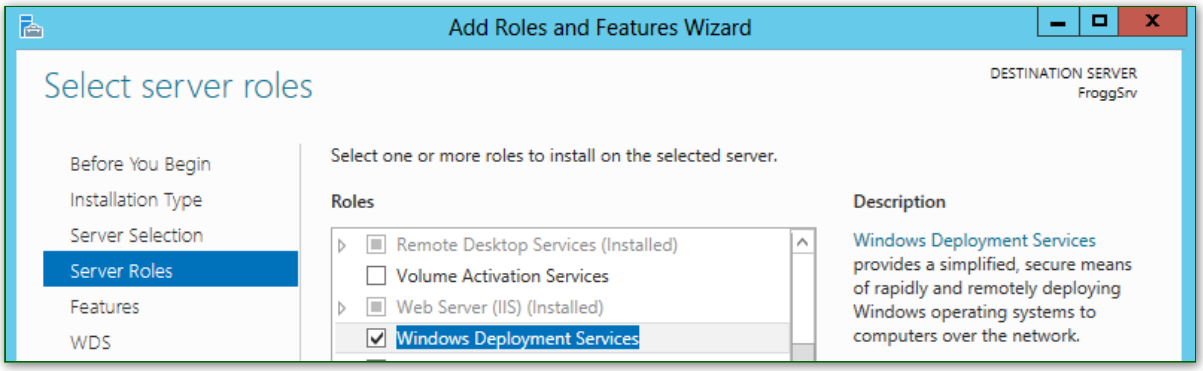
WDS Installation

Add role wizard

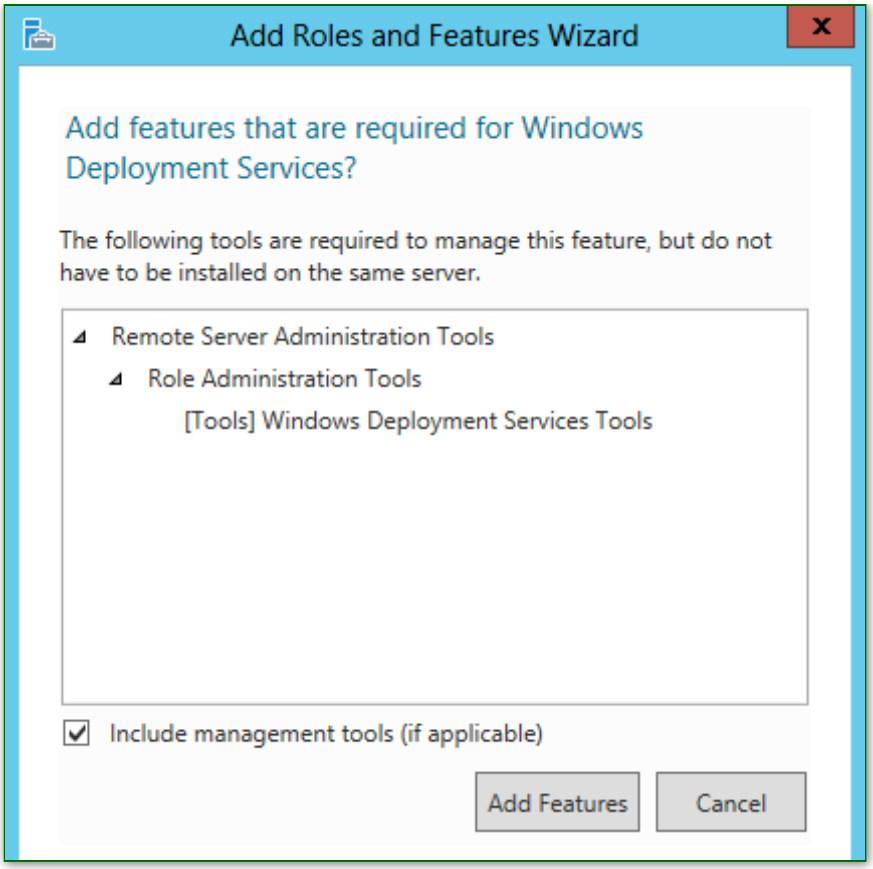
Server selection



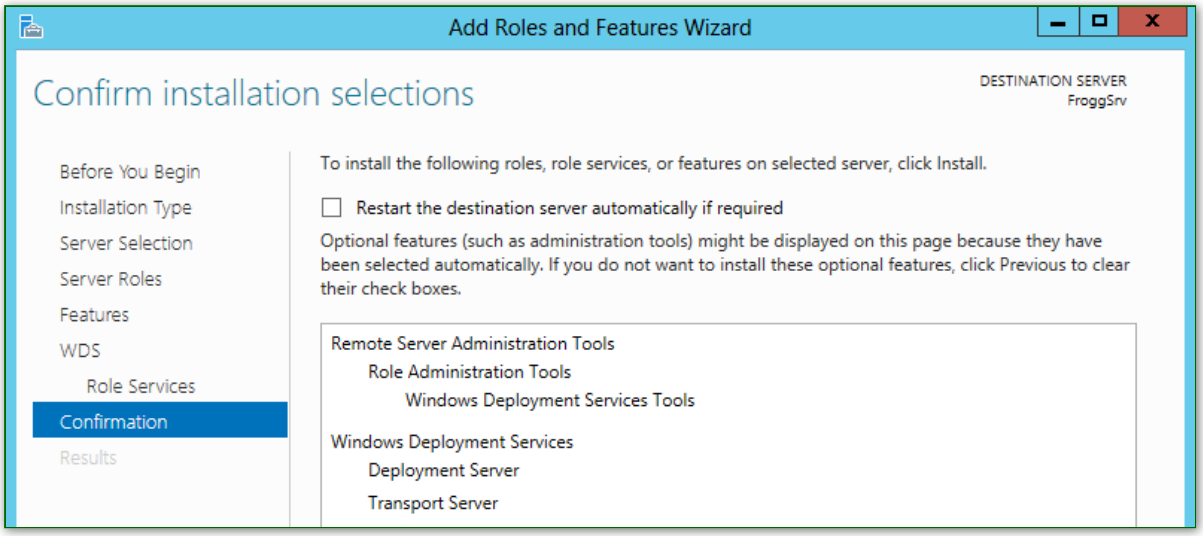
WDS role selection



Adding features

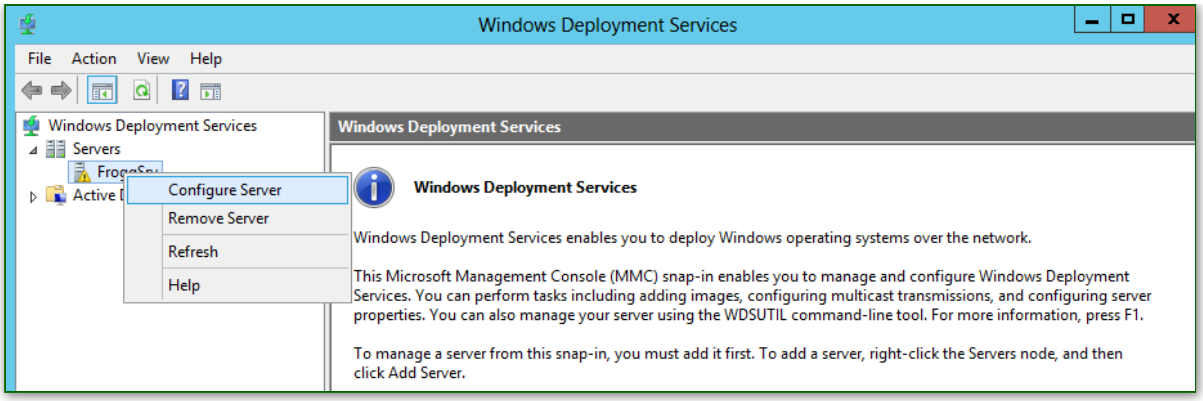


Adding role confirmation

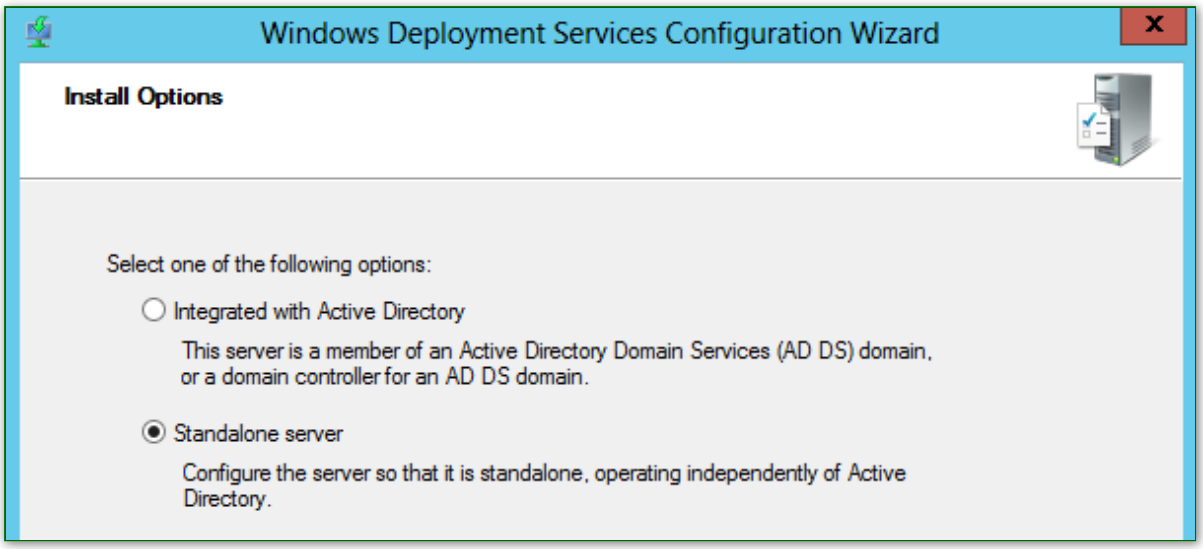


WDS Configuration

Start WDS console

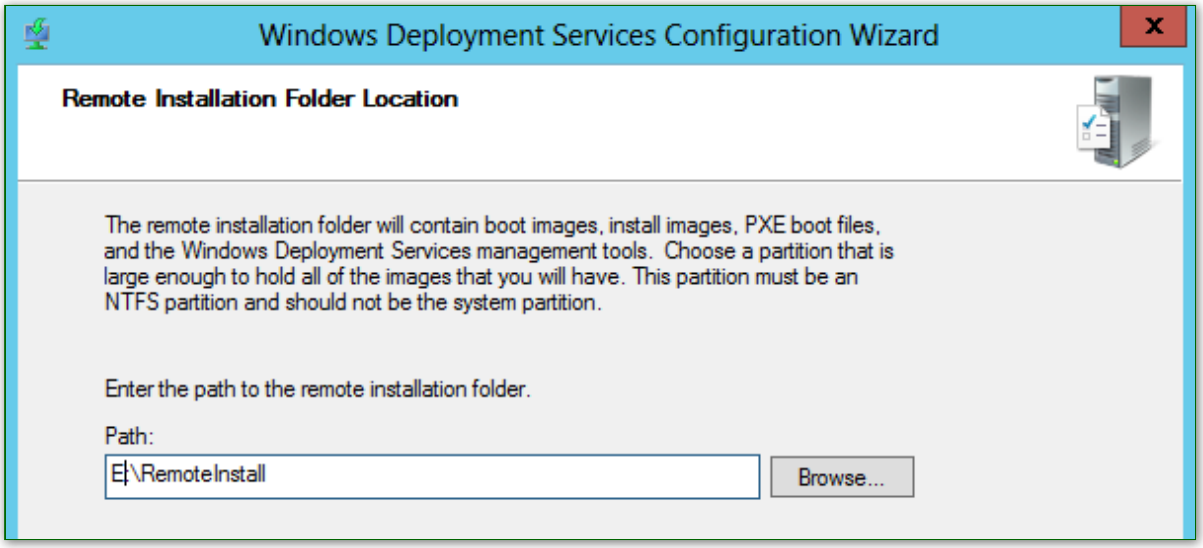


Server type selection



Note :
I use the stand alone option cause i don't have Active Directory installed on my domain.
If you have Active Directory enabled, you may choose the first option.

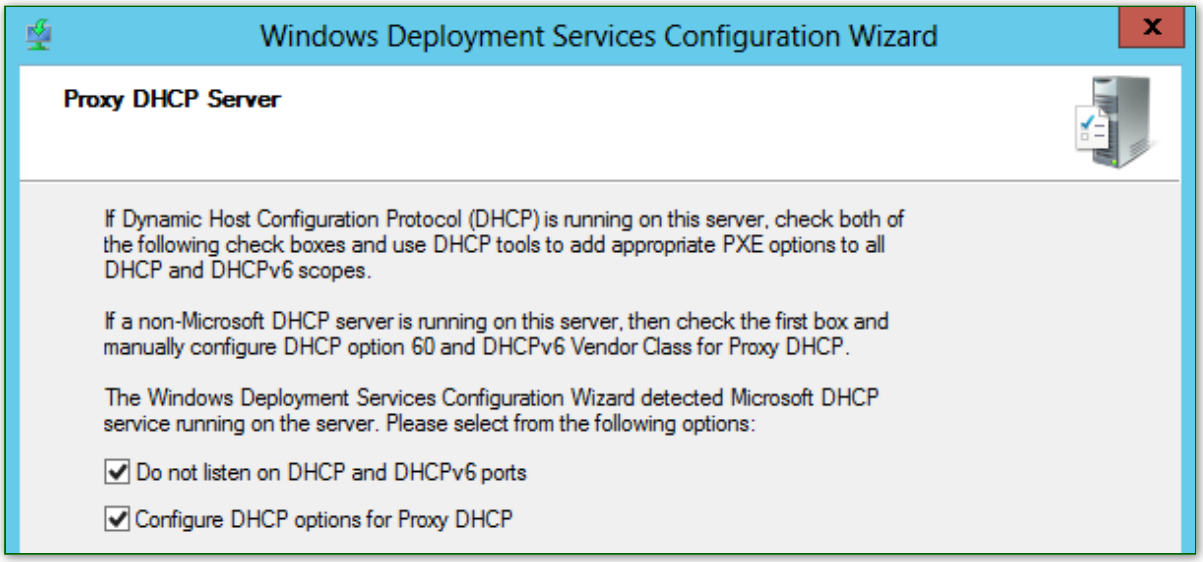
WDS files path selection



Note 1 :
For the next part of tutorial "E:\RemoteInstall" will be used as WDS file folder, but you can adapt it according to your configuration.

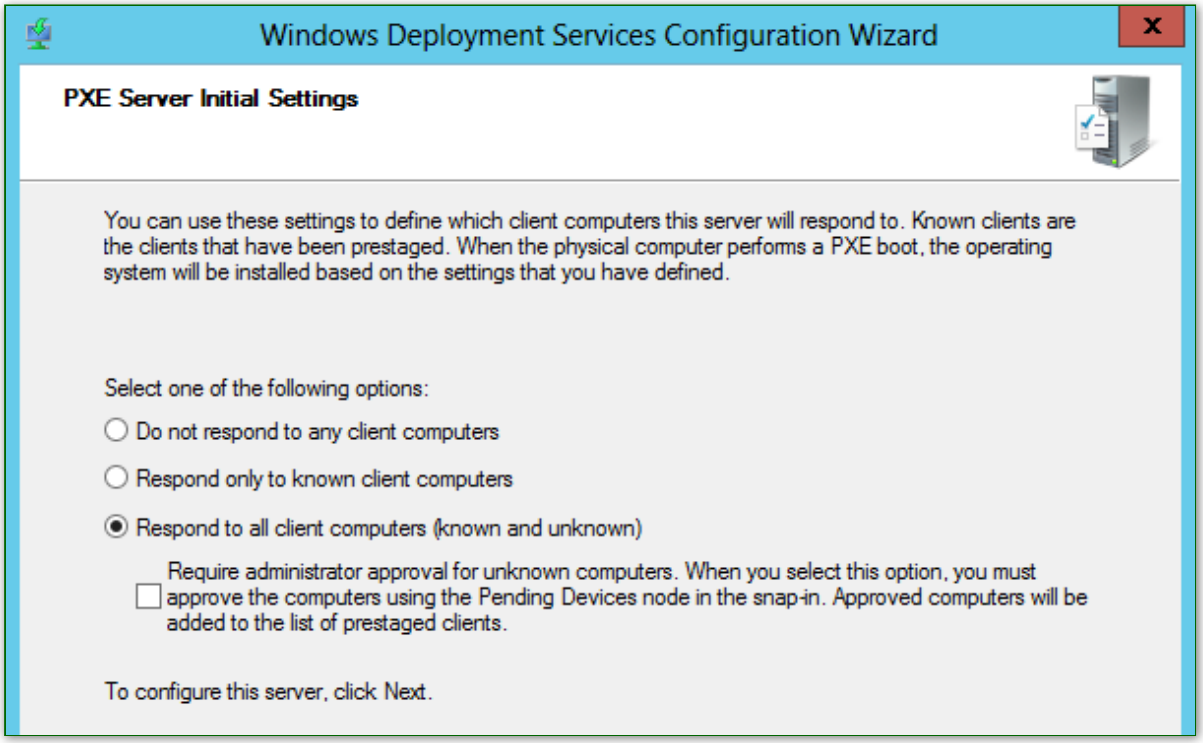
Note 2 :
You will need a big amount of place to store OS installation files, best practices are to use a dedicated hard drive with at least 200Go of free space

DHCP configuration



Note :
Thoose options are checked because DHCP and WDS are on the same host, uncheck thoose options if the DHCP is running on another server.

PXE secutiry settings



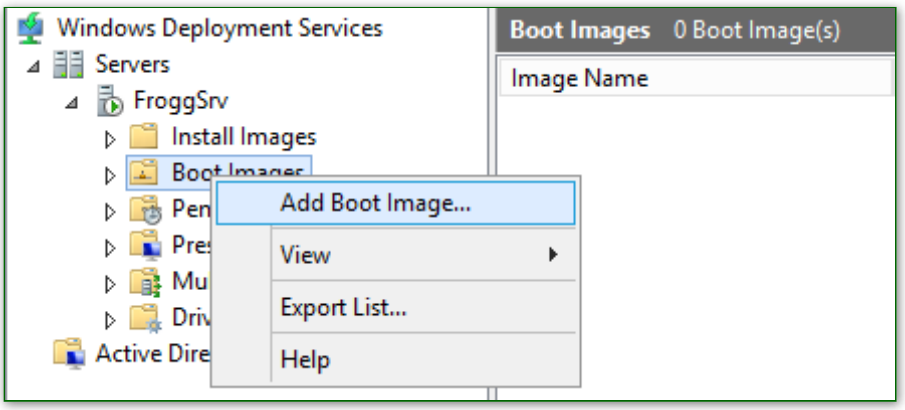
Note :
Respond to all client computers is not advisable in most of networks for security reason, as i use it in home local network enough securized i can choose this option.

Most of the time for security reason only know client computers or require administrator approval options should be selected.

Adding Boot image

By default, even with WDS PXE enabled, it won't works, a default bootable Windows Imaging Format (.wim) file (most of the time called "boot.wim") is required.
To add a boot image you have to use WDS console.

Adding a boot image



Then select a boot.wim from the folder \sources\boot.wim of any recent Microsoft Windows OS

Note 1 :
you need to add a boot.wim for each architecture you need (x86 and x64 for example), select the boot.wim from an Microsoft OS with the desired architecture type.

Note 2 :
you can use for example Windows 7 files or even Windows 2012 files, the difference will be the menu displayed

Configuration Linux PXE

Syslinux

The Syslinux Project covers lightweight bootloaders for MS-DOS FAT filesystems (SYSLINUX), network booting (PXELINUX), bootable "El Torito" CD-ROMs (ISOLINUX), and Linux ext2/ext3/ext4 or btrfs filesystems (EXTLINUX). The project also includes MEMDISK, a tool to boot legacy operating systems (such as DOS) from nontraditional media; it is usually used in conjunction with PXELINUX and ISOLINUX (source syslinux wiki)

downloading Syslinux packages

This is the link where Syslinux files are available : https://www.kernel.org/pub/linux/utils/boot/syslinux/
for this tutorial i use the package syslinux-6.03.zip, i also tested syslinux-4.07.zip and both works the same way, so this tutorial should works also for old version.

copying Syslinux files to WDS server

Extract Syslinux-{version}.zip file
then copy the following files to the WDS file folder

copying x84 syslinux-{version}\ files to server folder E:\RemoteInstall\

copy bios\core\pxelinux.0 to boot\x86\pxelinux.0

copy bios\com32\elflink\ldlinux.c32 to boot\x86\ldlinux.c32

copy efi32\com32\menu\menu.c32 to boot\x86\menu.c32

copy efi32\com32\menu\vesamenu.c32 to boot\x86\vesamenu.c32

copy efi32\com32\chain\chain.c32 to boot\x86\chain.c32

copy efi32\com32\modules\reboot.c32 to boot\x86\reboot.c32

copy efi32\com32\modules\poweroff.c32 to boot\x86\poweroff.c32

copy efi32\com32\lib\libcom32.c32 to boot\x86\libcom32.c32

copy efi32\com32\libutil.c32 to boot\x86\libutil.c32

copy bios\memdisk\memdisk to boot\x86\memdisk

copy E:\RemoteInstall\boot\x86\pxeboot.n12 to boot\x86\pxeboot.0

copy E:\RemoteInstall\boot\x86\abortpxe.com to boot\x86\abortpxe.0

Create boot\x86\pxelinux.cfg\default

copying x64 syslinux-{version}\ files to server folder E:\RemoteInstall\

copy bios\core\pxelinux.0 to boot\x64\pxelinux.0

copy bios\com32\elflink\ldlinux.c32 to boot\x64\ldlinux.c32

copy efi64\com32\menu\menu.c32 to boot\x64\menu.c32

copy efi64\com32\menu\vesamenu.c32 to boot\x64\vesamenu.c32

copy efi64\com32\chain\chain.c32 to boot\x64\chain.c32

copy efi64\com32\modules\reboot.c32 to boot\x64\reboot.c32

copy efi64\com32\modules\poweroff.c32 to boot\x64\poweroff.c32

copy efi64\com32\lib\libcom32.c32 to boot\x64\libcom32.c32

copy efi64\com32\libutil.c32 to boot\x64\libutil.c32

copy bios\memdisk\memdisk to boot\x64\memdisk

copy E:\RemoteInstall\boot\x64\pxeboot.n12 to boot\x64\pxeboot.0

copy E:\RemoteInstall\boot\x64\abortpxe.com to boot\x64\abortpxe.0

Create boot\x64\pxelinux.cfg\default

Edit the pxelinux.cfg\default and add : copy to clipboard

```
DEFAULT menu.c32
```

Files description

sources : http://www.syslinux.org/wiki/index.php?title=Category:Modules

pxelinux.0 is used to start linux PXE boot.

menu.c32 is a comboot module for Syslinux that renders a menu on the screen.

vesamenu.c32 is a comboot module for Syslinux that renders a customizable menu on the screen (i think it work only on x64 system, i didn't had it works for x86 computers).

chain.c32 is a COM32 module for Syslinux. It can chainload MBRs, partition boot sectors, Windows bootloaders (ntldr, setupldr.bin and bootmgr), MS-DOS and PC-DOS io.sys, Freedos kernel.sys, isolinux.bin (only from ISOLINUX), grldr of grub4dos or a bootsector saved to a file. It can also swap BIOS drive numbers or hide partitions.

reboot.c32 (optional) is a COM32 module for Syslinux that is able to reboot the PC.
It supports cold and warm rebooting.

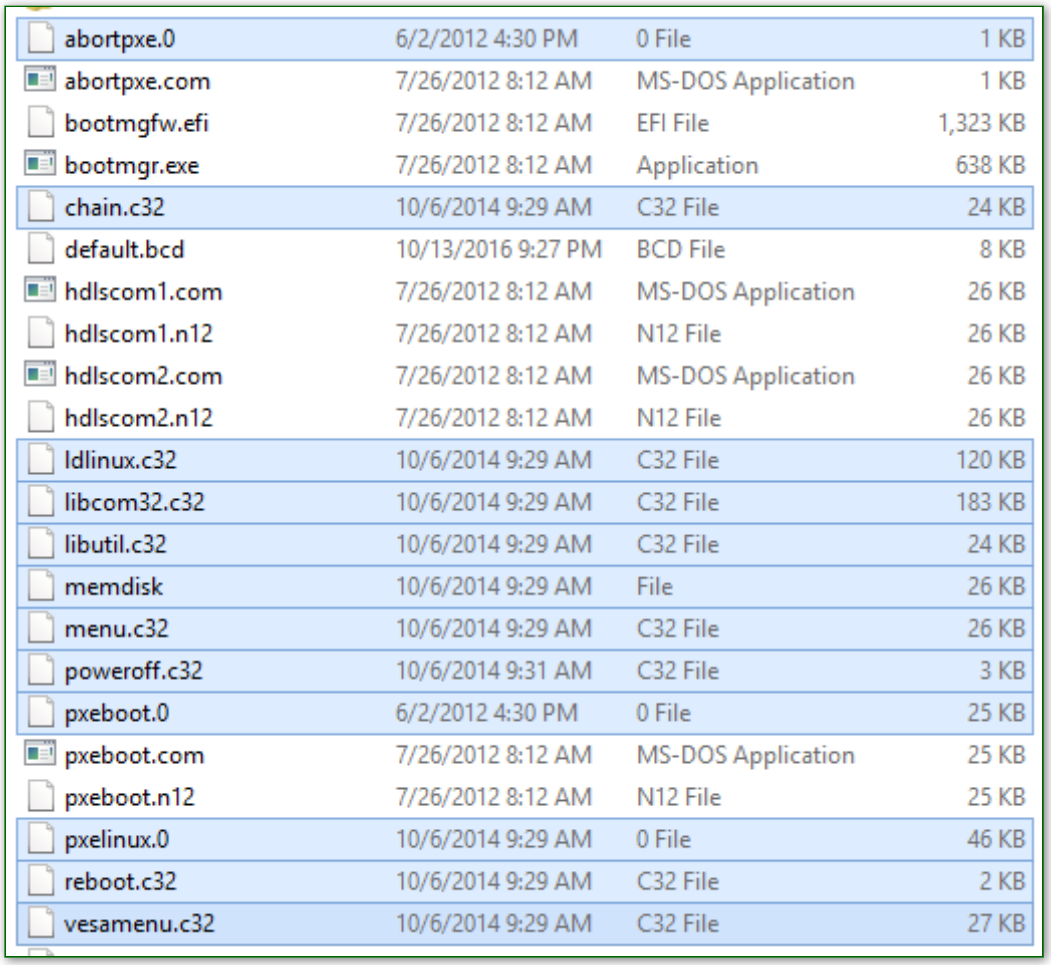
poweroff.c32 (optional) is a COM32 module for Syslinux that is able to shut down the PC.

MEMDISK (optional) is meant to allow booting legacy operating systems. MEMDISK can boot floppy images, hard disk images and some ISO images

pxeboot.0 is the WDS file used to start WDS PXE boot

abortpxe.0 (optional) is the WDS file used to cancel PXE boot

Result



abortpxe.0	6/2/2012 4:30 PM	0 File	1 KB
abortpxe.com	7/26/2012 8:12 AM	MS-DOS Application	1 KB
bootmgfw.efi	7/26/2012 8:12 AM	EFI File	1,323 KB
bootmgr.exe	7/26/2012 8:12 AM	Application	638 KB
chain.c32	10/6/2014 9:29 AM	C32 File	24 KB
default.bcd	10/13/2016 9:27 PM	BCD File	8 KB
hdlscom1.com	7/26/2012 8:12 AM	MS-DOS Application	26 KB
hdlscom1.n12	7/26/2012 8:12 AM	N12 File	26 KB
hdlscom2.com	7/26/2012 8:12 AM	MS-DOS Application	26 KB
hdlscom2.n12	7/26/2012 8:12 AM	N12 File	26 KB
ldlinux.c32	10/6/2014 9:29 AM	C32 File	120 KB
libcom32.c32	10/6/2014 9:29 AM	C32 File	183 KB
libutil.c32	10/6/2014 9:29 AM	C32 File	24 KB
memdisk	10/6/2014 9:29 AM	File	26 KB
menu.c32	10/6/2014 9:29 AM	C32 File	26 KB
poweroff.c32	10/6/2014 9:31 AM	C32 File	3 KB
pxeboot.0	6/2/2012 4:30 PM	0 File	25 KB
pxeboot.com	7/26/2012 8:12 AM	MS-DOS Application	25 KB
pxeboot.n12	7/26/2012 8:12 AM	N12 File	25 KB
pxelinux.0	10/6/2014 9:29 AM	0 File	46 KB
reboot.c32	10/6/2014 9:29 AM	C32 File	2 KB
vesamenu.c32	10/6/2014 9:29 AM	C32 File	27 KB

Note 1 :
In old Syslinux version like 4.07, syslinux-{version}\efiXX\com32 files are in syslinux-{version}\com32 folder

Note 2 :
If you need only x86 or x64, you will need only to add the wanted version stuff

Add Linux PXE boot to WDS

Code for x86 (to launch in a cmd) copy to clipboard

```
wdsutil /set-server /bootprogram:boot\x86\pxelinux.0 /architecture:x86
wdsutil /set-server /N12bootprogram:boot\x86\pxelinux.0 /architecture:x86
```

Code for x64 (to launch in a cmd) copy to clipboard

```
wdsutil /set-server /bootprogram:boot\x64\pxelinux.0 /architecture:x64
wdsutil /set-server /N12bootprogram:boot\x64\pxelinux.0 /architecture:x64
```

Note :
PXE Linux boot should now works, you can test it using a client computer with network boot.

But the menu isn't configured, so you still won't be able to load things a message will appear : "Initial menu has no LABEL entries!"

Configuration

Configuration file

the basis : copy to clipboard

```
#
# PXE configuration file
#
DEFAULT menu.c32

###[ Boot on WDS ]###
LABEL WDS
        MENU LABEL WDS (Windows Deployment Services)
        KERNEL pxeboot.0

###[ Boot on local drive ]###
LABEL Local
        MENU LABEL Back to boot proccess
        LOCALBOOT 0
```

Note 1 :
are used as comments

Note 2 :
As you can see some file we added are not important, they just are there to offer more options like reboot.c32 to reboot computer from the menu

Adding Images

There around 3 ways to add bootable operating system.
In this part, I will use some common free operating system as example.

Using memdisk

copy to clipboard

```
MENU LABEL Comodo rescue disk
        MENU DEFAULT
        KERNEL memdisk
        INITRD Images/iso/comodo_rescue_disk_2.0.275239.1.iso
```

Note :
This way is the easiest way for implementation. it can works with .img too.
But this is the worst way :
- Image iso/img will be sent to client and then uncompress, so it take a lot of client memory to load and lot of bandwith to transfert.
- The transfert will be by TFTP which is slow.
- I think it shouldn't be used if iso/img is greater then 100mo (even with 100mo it is already long to load)

Using initrd & nfsroot

copy to clipboard

```
MENU LABEL Lubuntu x64 live (login : root / toor | user / live )
    KERNEL Images/lubuntux64/casper/vmlinuz.efi
    INITRD Images/lubuntux64/casper/initrd.lz
    APPEND root=/dev/nfs boot=casper netboot=nfs nfsroot={WDSserverIP}:/lubuntux64
```

Note :
- This way is the most common for debian based system.
- A NFS sharing is require
- {WDSserverIP} is the IP of the WDS server
- for debian based OS you can use debian-installer/language=fr console-setup/layoutcode=fr option in APPEND to change keyboard layout

Using initrd & fetch

copy to clipboard

```
MENU LABEL Clonezilla x64
    KERNEL Images/clonezillax64/live/vmlinuz
    APPEND boot=live union=overlay fetch=http://192.168.0.2/wds/clonezillax64/filesystem.squas
    INITRD Images/clonezillax64/live/initrd.img
```

Note :
- fech can be used with tftp, ftp or http (and maybe other protocols, but i didn't tested them)
- as tftp is slow, it is recommended to use an other protocol depending of you available services

Advanced Configuration

PXE advanced configuration file option

To be more precise, it is not really PXE but Syslinux configuration file, PXE is the whole boot process.

Lots of options are available to set your PXE Linux menu, all commands can be found on the official web site : http://www.syslinux.org/wiki/index.php?title=Menu
This is the main commands :

LABEL

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```
#Set a line selected as default, with text help on selection over
LABEL Local
    MENU LABEL ^Back to boot proccess
    MENU DEFAULT
    LOCALBOOT 0
    TEXT HELP
        Exit and continue normal boot
    ENDTEXT
```

MENU BEGIN

copy to clipboard

```
#Create a menu entry (sub level of menu)
MENU BEGIN sTools
    MENU TITLE ^System Security Tools
    INCLUDE pxelinux.cfg/menu_stools.cfg
MENU END
```

MENU EXIT

copy to clipboard

```
#back to parent menu (exit a sub level)
LABEL Back
    MENU LABEL ^Back to main menu
    MENU EXIT
    TEXT HELP
        Go back to main menu
    ENDTEXT
```

INCLUDE

copy to clipboard

```
#include a file content into the menu
INCLUDE pxelinux.cfg/com_conf.cfg
```

MENU SEPARATOR

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```
#add a separator line
MENU SEPARATOR
```

Note :
MENU DEFAULT will be the default menu selected ^ before menu title is used to Highlight the first letter
it doesn't works on MENU BEGIN and all first letters have to be unique, else only the first occurence will be highlighted
\ can be added at the end of line to split the line command

PXE screen customization

basic display is not really funky, to pimp your PXE you can use vesamenu which allow customization
Lots of options are available to customize your menu, all commands can be found on the official web site : http://www.syslinux.org/wiki/index.php?title=Comboot/menu.c32
This is my menu configuration :

copy to clipboard

```
#####################
###[ PXE Options ]###
#####################

#Enable advanced display
UI vesamenu.c32

###[ PXE Text ]###
MENU TITLE Starting PXE / Installation for x64
MENU TABMSG Select the desired operation

###[ PXE Configuration ]###
#no prompt (value = 0/1)
PROMPT 0
#no timeout (not required)
```

Result :

Tips :
The menu option doesn't offer a nice display, the trick is to remove all borders and backgrounds and then add to the Image fake border and background for the menu

PXE advanced configuration file sample

here you can find my full configurations files

pxelinux.cfg/default

copy to clipboard

```
#
# PXE configuration file
#
DEFAULT menu.c32

###[ PXE Config ]###
INCLUDE pxelinux.cfg/com_conf.cfg

###[ PXE Menus ]###
INCLUDE pxelinux.cfg/menu_main.cfg
```

pxelinux.cfg/com_conf.cfg

copy to clipboard

```
######################
###[ PXE Options ]###
######################

#Enable advanced display
UI vesamenu.c32

###[ PXE Text ]###
MENU TITLE Starting PXE / Installation for x64
MENU TABMSG Select the desired operation

###[ PXE Configuration ]###
```

```
#no prompt (value = 0/1)
PROMPT 0
```

pxelinux.cfg/menu_main.cfg

copy to clipboard

```
###[ Boot on WDS ]###
LABEL WDS
    MENU LABEL ^WDS (Windows Deployment Services)
    KERNEL pxeboot.0
    TEXT HELP
        Start WDS to install Windows Operating System
    ENDTEXT

###[ Menu separator ]###
MENU SEPARATOR

###[ Go to linux menu ]###
MENU BEGIN Linux
    MENU TITLE ^Linux x64 install/live
    INCLUDE pxelinux.cfg/menu_linux.cfg
```

pxelinux.cfg/menu_ctools.cfg

copy to clipboard

```
###[ PXE Title ]###
MENU TITLE Computer Common Tools

###[ PXE Menus ]###

LABEL Gparted
    MENU LABEL ^Gparted x64
    MENU DEFAULT
    KERNEL Images/gpartedx64/live/vmlinuz
    APPEND nomodeset noprompt boot=live gl_lang=fr_FR gl_kbd=fr keyb=fr config components ur
    INITRD Images/gpartedx64/live/initrd.img
    TEXT HELP
        launch Gparted to set drive partition
    ENDTEXT
```

pxelinux.cfg/menu_ftools.cfg

copy to clipboard

```
###[ PXE Title ]###
MENU TITLE Computer Fix Tools

###[ PXE Menus ]###

LABEL Comodo
    MENU LABEL ^Comodo rescue disk
    MENU DEFAULT
    KERNEL memdisk
    INITRD Images/iso/comodo_rescue_disk_2.0.275239.1.iso
    APPEND iso raw
    TEXT HELP
        Live boot on Comodo rescue disk
    ENDTEXT
```

pxelinux.cfg/menu_linux.cfg

copy to clipboard

```
###[ PXE Title ]###
MENU TITLE Linux x64 install/live

###[ PXE Menus ]###

LABEL Lubuntulive
    MENU LABEL ^Lubuntu x64 live (login : root / toor | user / live )
    MENU DEFAULT
    KERNEL Images/lubuntux64/casper/vmlinuz.efi
    INITRD Images/lubuntux64/casper/initrd.lz
    APPEND root=/dev/nfs debian-installer/language=fr console-setup/layoutcode=fr boot=caspe
    TEXT HELP
        Live boot on Lubuntu
```

```
    ENDTEXT
```

pxelinux.cfg/menu_stools.cfg

copy to clipboard

```
###[ PXE Title ]###
MENU TITLE System Security Tools

###[ PXE Menus ]###

LABEL Kali
    MENU LABEL ^Kali x64 live
    KERNEL Images/kalix64/live/vmlinuz
    INITRD Images/kalix64/live/initrd.img
    APPEND root=/dev/nfs debian-installer/language=fr console-setup/layoutcode=fr boot=live
    TEXT HELP
        Live boot on Kali
    ENDTEXT
```

Sample of images configuration

Debian installer

copy to clipboard

```
LABEL DebianInstall
    MENU LABEL ^Debian x64 install (not workin atm)
    KERNEL Images/debianx64/linux
    INITRD Images/debianx64/initrd.gz
    TEXT HELP
        Debian installer
    ENDTEXT
```

Require a netboot installer, else an error will occur cause CD-Rom cannot be found

Lubuntu live

copy to clipboard

```
LABEL Lubuntulive
    MENU LABEL ^Lubuntu x64 live (login : root / toor | user / live )
    MENU DEFAULT
    KERNEL Images/lubuntux64/casper/vmlinuz.efi
    INITRD Images/lubuntux64/casper/initrd.lz
    APPEND root=/dev/nfs debian-installer/language=fr console-setup/layoutcode=fr boot=casper
    TEXT HELP
        Live boot on Lubuntu
    ENDTEXT
```

Ubuntu live

copy to clipboard

```
LABEL UbuntuLive
    MENU LABEL ^Ubuntu x64 live
    KERNEL Images/ubuntux64/casper/vmlinuz.efi
    INITRD Images/ubuntux64/casper/initrd.lz
    APPEND root=/dev/nfs debian-installer/language=fr console-setup/layoutcode=fr boot=casper
    TEXT HELP
        Live boot on Ubuntu
    ENDTEXT
```

mfs BSD

copy to clipboard

```
LABEL mfsbsd
    MENU LABEL ^mfsBSD x64 Live ( login : root / mfsroot )
    MENU PASSWD frogg
    KERNEL memdisk
    INITRD Images/iso/mfsbsd-10.3-RELEASE-amd64.img raw
```

```
    TEXT HELP
        Live boot on mfsBSD
    ENDTEXT
```

Gparted live

copy to clipboard

```
LABEL Gparted
    MENU LABEL ^Gparted x64
    MENU DEFAULT
    KERNEL Images/gpartedx64/live/vmlinuz
    APPEND nomodeset noprompt boot=live gl_lang=fr_FR gl_kbd=fr keyb=fr config components unio
    INITRD Images/gpartedx64/live/initrd.img
    TEXT HELP
        launch Gparted to set drive partition
    ENDTEXT
```

Clonezilla live

copy to clipboard

```
LABEL Clonezilla
    MENU LABEL ^Clonezilla x64
    KERNEL Images/clonezillax64/live/vmlinuz
    APPEND boot=live union=overlay live-config noswap nolocales edd=on nomodeset ocs_live_run=
    INITRD Images/clonezillax64/live/initrd.img
    TEXT HELP
        Launch Clonezilla to Clone hard disk
    ENDTEXT
```

since version 2.4.2-10, the option "union=overlay" has to be added to have it work, else an error "clonezilla mounting aufs on /root/ failed no such device" occure.

Refracta

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```
LABEL Refracta
    MENU LABEL ^Refracta8 x64 (log : root / root)
    KERNEL Images/refracta8x64/live/vmlinuz
    APPEND boot=live root=/dev/nfs netboot=nfs nfsroot=192.168.0.2:/refracta8x64
    INITRD Images/refracta8x64/live/initrd.img
    TEXT HELP
        Launch Refracta8 Live CD creator
    ENDTEXT
```

Hardware Detection live

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```
LABEL HardwareDetection
    MENU LABEL ^Hardware Detection
    KERNEL Images/hdt/hdt.c32
    TEXT HELP
        Detect your computer hardware
    ENDTEXT
```

Memory Test live

copy to clipboard

```
LABEL MemoryTest
    MENU LABEL ^Memory Test
    KERNEL Images/memtest/memtest86
    TEXT HELP
        Test tour computer memory
    ENDTEXT
```

Comodo rescue disk live

copy to clipboard

```
LABEL Comodo
    MENU LABEL ^Comodo rescue disk
    MENU DEFAULT
    KERNEL memdisk
    INITRD Images/iso/comodo_rescue_disk_2.0.275239.1.iso
    APPEND iso raw
    TEXT HELP
```

```
        Live boot on Comodo rescue disk
    ENDTEXT
```

AVG rescue disk live

copy to clipboard

```
LABEL AVG
    MENU LABEL ^AVG rescue disk
    KERNEL memdisk
    INITRD Images/iso/avg_arl_cdi_all_120_160420a12074.iso
    APPEND iso raw
    TEXT HELP
        Live boot on AVG rescue disk
    ENDTEXT
```

System Rescue disk live

copy to clipboard

```
LABEL Systemrescue
    MENU LABEL ^System Rescue disk
    KERNEL Images/systemrescue/isolinux/rescue64
    APPEND netboot=http://192.168.0.2/wds/systemrescue/sysrcd.dat
    INITRD Images/systemrescue/isolinux/initram.igz
    TEXT HELP
        Launch System Rescue
    ENDTEXT
```

Kali live

copy to clipboard

```
LABEL Kali
    MENU LABEL ^Kali x64 live
    KERNEL Images/kalix64/live/vmlinuz
    INITRD Images/kalix64/live/initrd.img
    APPEND root=/dev/nfs debian-installer/language=fr console-setup/layoutcode=fr boot=live ne
    TEXT HELP
        Live boot on Kali
    ENDTEXT
```

Note :
Some of thoose configurations are set to use french keyboard & language (**fr**) you can remove thoose parameters or change it for your language.

Troubleshooting

stuck on copyright "Peter Anvin et Al"

You may have a trouble in your linux pxe configuration file, for exemple a bad use of INCLUDE can make infinite loop.
Try to comment some part of code until Linux PXE screen boot, you may find the problematic line.

MENU DEFAULT won't works

If you use ^ before menu first letter, they hahe to be different else MENU DEFAULT won't works.

xxx.c32 not a com32r image

You probably mixed files, you need to use all files from same syslinux archive, if you use file from 2 differents packages you might get this error message.

Download stop when i use fetch

Download stop because client computer memory is too low !

Can't download images stuff using http

By default IIS allow only some kind of extensions.
You may need to allow .squashfs extensions (and maybe .md5 &.dat for some case).

PXE screen customization won't work on x86 computer

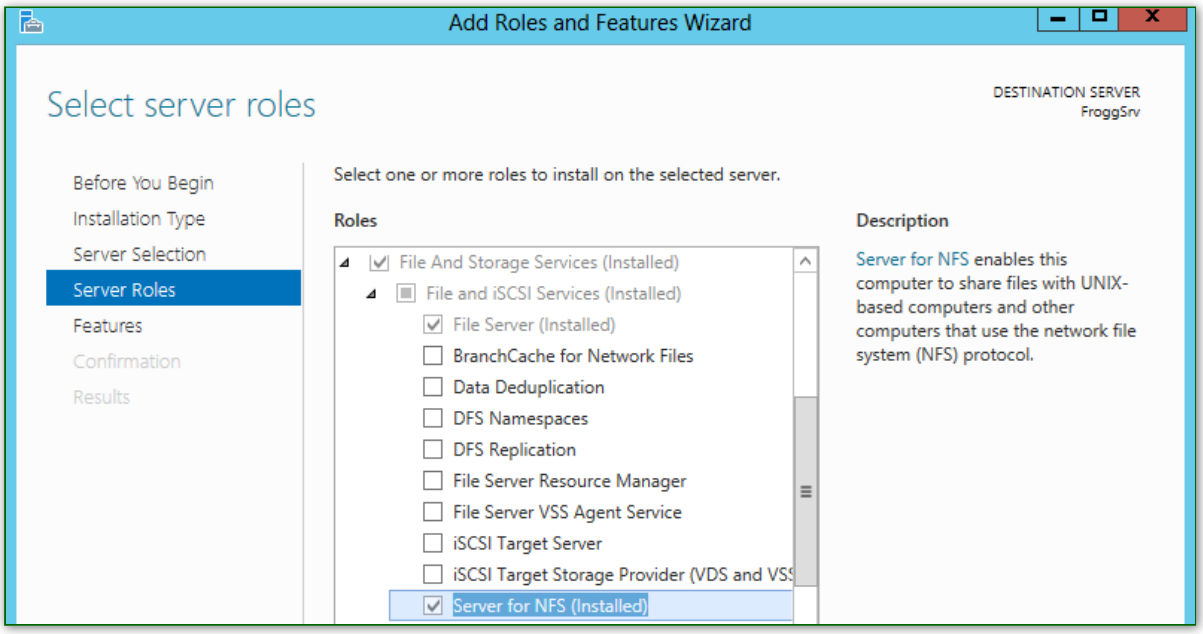
Yup, same for me, i dunno why, maybe it is not design for it

Is There A Way To Define Constants Or Variables?

At present, there is no way to define constants or variables in the configuration file. That feature will be added eventually.

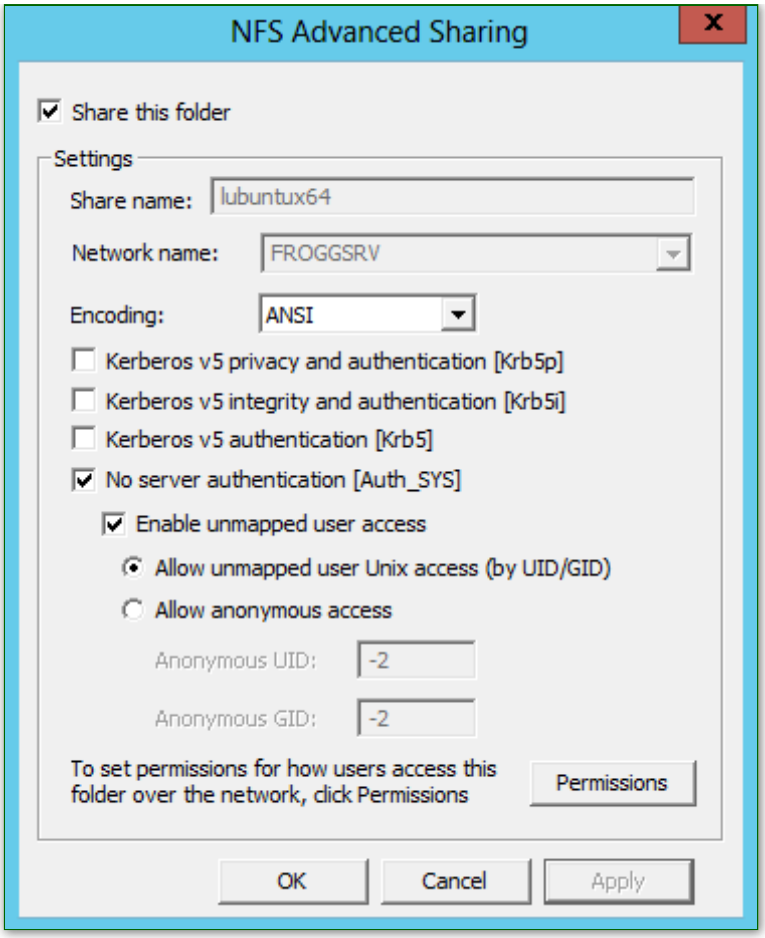
How to enable NFS on Windows ?

Like that :



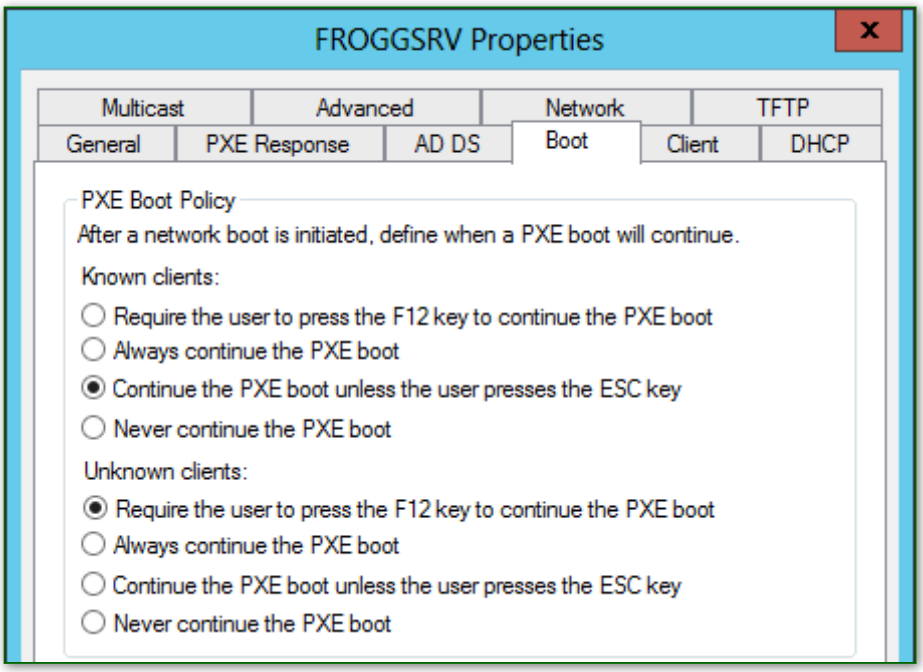
NFS not available from Linux PXE

Check your NFS shared folder options, you need to allow Unix access :



Can i change WDS boot option for clients ?

Yes, like that:



Any other questions...?

You can use the contact form to ask question

References

http://www.wonkity.com/~wblock/docs/html/pxe.html

http://www.syslinux.org/wiki

http://www.syslinux.org/wiki/index.php?title=WDSLINUX

http://www.syslinux.org/wiki/index.php?title=PXELINUX

http://www.syslinux.org/wiki/index.php?title=Comboot/menu.c32

https://wiki.archlinux.org/index.php/Syslinux

http://www.syslinux.org/wiki/index.php?title=PXELINUX

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