

2024

BTS S102

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# TP-FOG

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```
root@debian12:~# mkdir fog
root@debian12:~# apt install unzip -y
```

Pour installer fog project on effectuera ensuite un wget  
<https://github.com/FOGProject/fogproject/archive/1.5.10.zip>  
On lancera ensuite l'installation de fog avec les commandes suivantes:

```
root@debian12:~/fog# ls
1.5.10.zip  fogproject-1.5.10
root@debian12:~/fog# cd fogproject-1.5.10
root@debian12:~/fog/fogproject-1.5.10# ld=s
root@debian12:~/fog/fogproject-1.5.10# ls
authors.txt  bin  CONTRIBUTING.md  lib  LICENSE  packages  README.md  'Release Notes.MD'  SECURITY.md  SELinux  src  utils
root@debian12:~/fog/fogproject-1.5.10# cd bin
root@debian12:~/fog/fogproject-1.5.10/bin#
```

```
root@debian12:~/fog/fogproject-1.5.10/bin# ls
installfog.sh
```

```
root@debian12:~/fog/fogproject-1.5.10/bin# ./installfog.sh_
```

```
What type of installation would you like to do? [N/s (Normal/Storage)] N
```

```
We found the following interfaces on your system:
```

```
* ens18 - 192.168.20.48/24
```

```
Would you like to change the default network interface from ens18?
```

```
If you are not sure, select No. [y/N] n
```

```
Would you like to setup a router address for the DHCP server? [Y/n] n
```

```
Would you like DHCP to handle DNS? [Y/n] n
```

```
Would you like to use the FOG server for DHCP service? [y/N] y
```

```
This version of FOG has internationalization support, would  
you like to install the additional language packs? [y/N] n
```

```
Using encrypted connections is state of the art on the web and we  
encourage you to enable this for your FOG server. But using HTTPS  
has some implications within FOG, PXE and fog-client and you want  
to read https://wiki.fogproject.org/HTTPS before you decide!
```

```
Would you like to enable secure HTTPS on your FOG server? [y/N] n
```

```
Which hostname would you like to use? Currently is: debian12
```

```
Note: This hostname will be in the certificate we generate for your  
FOG webserver. The hostname will only be used for this but won't be  
set as a local hostname on your server!
```

```
Would you like to change it? If you are not sure, select No. [y/N]
```

Une série de questions  
vous sera alors posée pour  
effectuer la configuration  
de votre FOG.

Dans notre cas, nous  
avons décidé d'activer le  
DHCP sur notre serveur  
FOG afin de simplifier la  
procédure par la suite.

```
Are you ok with sending this information? [Y/n] y
```

```
#####  
# FOG now has everything it needs for this setup, but please #  
# understand that this script will overwrite any setting you may #  
# have setup for services like DHCP, apache, pxe, tftp, and NFS. #  
#####  
# It is not recommended that you install this on a production system #  
# as this script modifies many of your system settings. #  
#####  
# This script should be run by the root user. #  
# It will prepend the running with sudo if root is not set #  
#####  
# Please see our wiki for more information at: #  
#####  
# https://wiki.fogproject.org/wiki/index.php #  
#####
```

```
* Here are the settings FOG will use:  
* Base Linux: Debian  
* Detected Linux Distribution: Debian GNU/Linux  
* Interface: ens18  
* Server IP Address: 192.168.20.48  
* Server Subnet Mask: 255.255.255.0  
* Hostname: debian12  
* Installation Type: Normal Server  
* Internationalization: No  
* Image Storage Location: /images  
* Using FOG DHCP: Yes  
* DHCP router Address:  
* Send OS Name, OS Version, and FOG Version: Yes
```

```
* Are you sure you wish to continue (Y/N) y
```

```
* Installation Started
```

```
* Testing internet connection....._
```

Une fois la configuration effectuée,  
votre FOG s'installera et configurera  
tous les fichiers nécessaires à son  
utilisation.

Vous devrez ensuite, depuis un client, accéder à l'interface web de FOG en vous rendant à l'adresse suivante :

<http://192.168.20.48/fog/management> (remplacez l'adresse IP par celle de votre serveur FOG).

Une fois sur l'interface, cliquez sur Install/Update Now pour finaliser l'installation.

FOG Project

Install/Update

If you would like to backup your FOG database you can do so using MySQL Administrator or by running the following command in a terminal window (Applications->System Tools->Terminal), this will save the backup in your home directory.

```
mysqldump --allow-keywords -x -v fog > fogbackup.sql
```

Your FOG database schema is not up to date, either because you have updated or this is a new FOG installation. If this is an upgrade, there will be a database backup stored on your FOG server defaulting under the folder /home/fogDBbackups. Should anything go wrong, this backup will enable you to return to the previous install if needed.

Are you sure you wish to install or update the FOG database?

Install/Update Now

```
Default User Information
Username: fog
Password: password

* Changed configurations:

The FOG installer changed configuration files and created the
following backup files from your original files:
* /etc/vsftpd.conf <=> /etc/vsftpd.conf.1732783443
* /etc/exports <=> /etc/exports.1732783443

root@debian:~/fog/fogproject-1.5.10/bin# _
```

Vous pourrez ensuite vous connecter à l'interface avec les identifiants qui vous auront été fournis.

**Attention** : Dans notre contexte, nous sommes dans un environnement de laboratoire. Ainsi, notre FOG sera sur un réseau séparé de celui des clients afin de ne pas impacter le réseau principal, qui possède déjà un DHCP. Pour des raisons pratiques, nous attribuerons ensuite une adresse IP statique à notre serveur FOG, en utilisant la même adresse IP que celle qui a été configurée lors de l'installation. En effet, les fichiers de configuration ont été paramétrés avec cette IP ; si elle change, votre FOG risque de ne plus fonctionner correctement.

Dashboard

System Overview  
Server information at a glance.

Username	fog
Web Server	192.168.20.48
Load Average	0.08, 0.02, 0.01
System Uptime	Up: 2 days 5 hrs 56 mins

Storage Group Activity  
Selected groups's current activity

Free: 10  
Queued: 0  
Active: 0

Storage Node Disk Usage  
Selected node's disk usage

Free: 4.93 GiB  
Used: 8.07 GiB

Credits FOG Client Donate to FOG Version 1.5.10

Comme nous pouvons le voir, nous avons accès à l'interface web de notre FOG, et nous pouvons également constater que notre DHCP fonctionne correctement.

```
Invite de commandes
Microsoft Windows [version 10.0.19043.928]
(c) Microsoft Corporation. Tous droits réservés.

C:\Users\Client>ipconfig

Configuration IP de Windows

Carte Ethernet Ethernet :

    Suffixe DNS propre à la connexion. . . . :
    Adresse IPv6 de liaison locale. . . . . : fe80::94a2:aa07:5102:af40%7
    Adresse IPv4. . . . . : 192.168.20.10
    Masque de sous-réseau. . . . . : 255.255.255.0
    Passerelle par défaut. . . . . :

C:\Users\Client>
```

User Management Edit: fog

Info ▾ General **Change password** API Settings Delete

Main Menu

- List All Users
- Create New User
- Export Users
- Import Users

User Change Password

User Password

User Password (confirm)

Update Password?

Pour changer votre mot de passe depuis l'interface web, allez dans Users > List All Users > sélectionnez l'utilisateur fog > Change Password. Ensuite, entrez votre nouveau mot de passe et cliquez sur Update.

Un LAMP est un ensemble d'outils utilisés pour créer et héberger des sites web ou des applications. Il regroupe :

**Linux** : Le système d'exploitation, qui constitue la base de l'infrastructure.

**Apache** : Le serveur web, qui gère les requêtes HTTP et diffuse les pages web aux utilisateurs.

**MySQL** : Le système de gestion de base de données, utilisé pour stocker et gérer les données.

**PHP**: Le langage de programmation utilisé pour développer des applications dynamiques côté serveur.

```
root@debian12:~# systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; preset: enabled)
   Active: active (running) since Thu 2024-12-12 09:40:27 CET; 3 days ago
```

```
root@debian12:~# systemctl status mysql
▶ mariadb.service - MariaDB 10.11.6 database server
   Loaded: loaded (/lib/systemd/system/mariadb.service; enabled; preset: enabled)
   Active: active (running) since Thu 2024-12-12 09:40:28 CET; 3 days ago
```

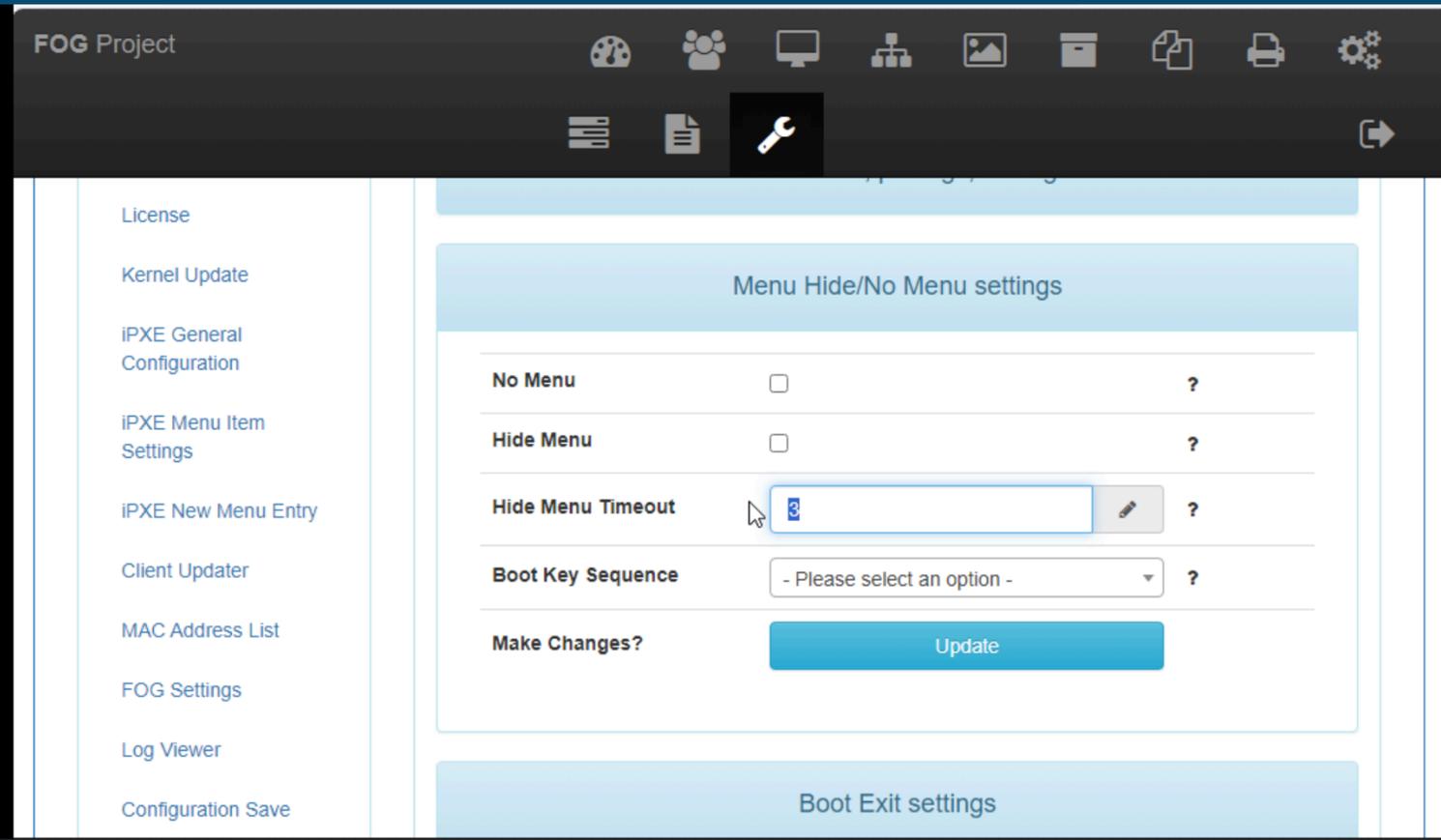
```
root@debian12:~# mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 19435
Server version: 10.11.6-MariaDB-0+deb12u1 Debian 12

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

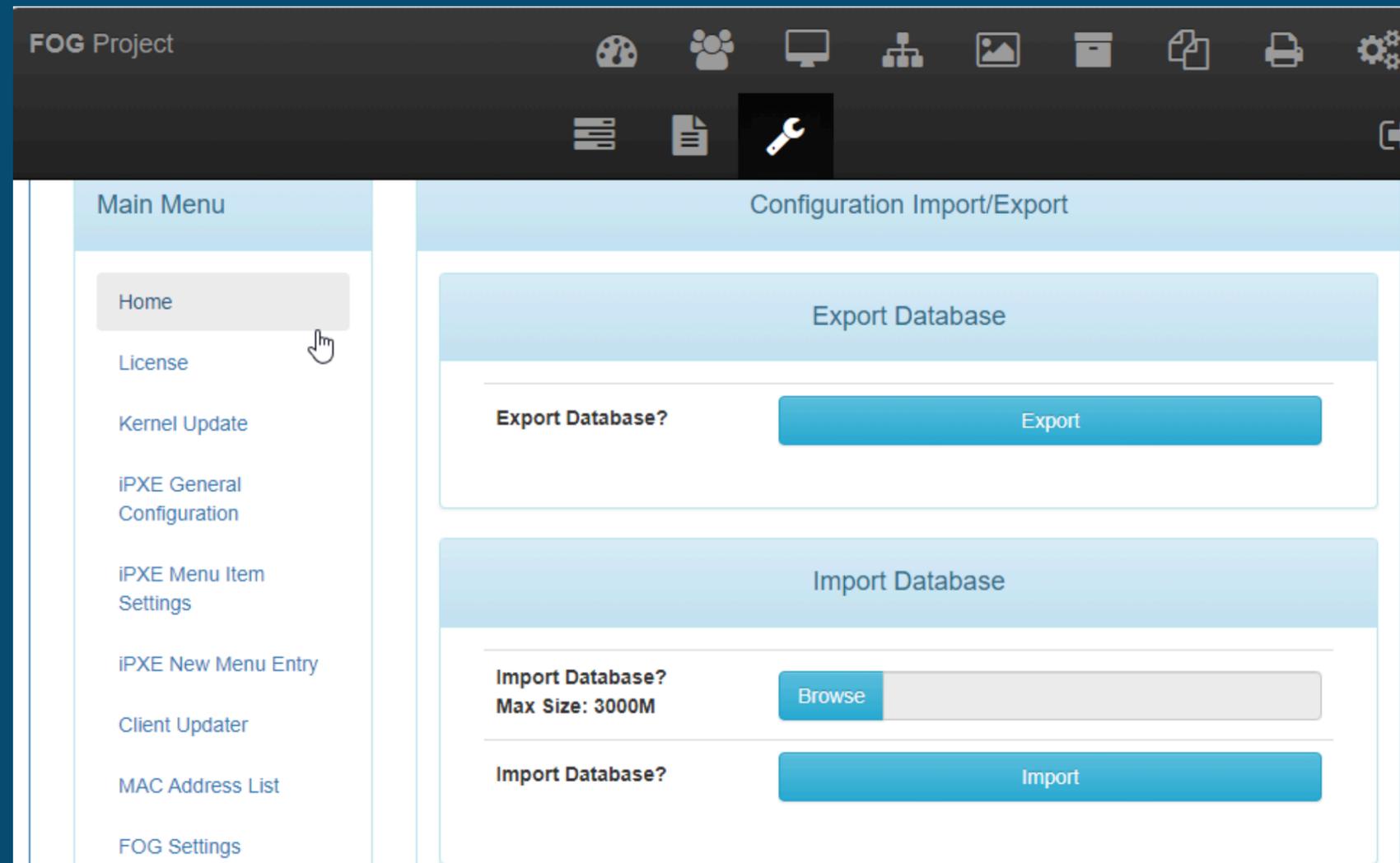
MariaDB [(none)]> SHOW DATABASES;
+-----+
| Database |
+-----+
| fog      |
| information_schema |
| mysql    |
| performance_schema |
| sys      |
+-----+
5 rows in set (0,078 sec)

MariaDB [(none)]> _
```



On remarque qu'une base de donnée fog à été créer spécifiquement pour le serveur.

Pour modifier la valeur du timeout du menu pxe rendez-vous dans IPXE General Configuration>Menu Hide/No Menu settings, puis changez la valeur du Hide Menu Timeout.



Pour sauvegarder la configuration de votre fog rendez-vous dans fog configuration > Configuration Save > cliquer sur Export pour sauvegarder la base de données > puis vous pourrez la restaurer en cliquant sur Browse, sélectionnée la sauvegarde et cliquer sur Import.

Report Management

Main Menu

- Home
- Equipment Loan
- History Report
- Host List
- Hosts And Users
- Imaging Log
- Inventory Report
- Pending Mac List

Full History Export

User	Information	Time	IP
<input type="text" value="Search."/>	<input type="text" value="Search..."/>	<input type="text" value="Search.."/>	<input type="text" value="Search..."/>
fog	[2024-11-29 13:20:30] HookEvent ID: 18 NAME: LoginSuccess has been successfully updated.	2024-11-29 13:20:30	192.168.20.97
fog	[2024-11-29 13:20:30] HookEvent ID: 19 NAME: MAIN_MENU_DATA has been successfully updated.	2024-11-29 13:20:30	192.168.20.97

Pour retrouver l'historique des logs, rendez-vous dans Report Management > History Report, laissez les champs vides, puis cliquez sur Search. Ensuite, sélectionnez l'icône du format que vous souhaitez télécharger.

Pour la capture d'image, que ce soit sur Windows ou sur Linux, dans le menu Proxmox, vous devrez modifier l'ordre de démarrage (boot order) pour mettre le réseau en priorité.

The screenshot shows the Proxmox VE interface for a virtual machine named 'windows-fog'. The 'Options' tab is selected, displaying various settings. A dialog box titled 'Edit: Boot Order' is open, showing a table of boot devices. The table has columns for '#', 'Enabled', 'Device', and 'Description'. The first entry is 'net0' (network), which is checked and highlighted, indicating it is the first boot device. The second entry is 'ide0' (disk), and the third is 'ide2' (ISO image).

#	Enabled	Device	Description
1	<input checked="" type="checkbox"/>	net0	virtio=BC:24:11:AB:94:88,bridge=vibr9,firewall=1
2	<input checked="" type="checkbox"/>	ide0	VM:vm-206-disk-1,size=32G
3	<input checked="" type="checkbox"/>	ide2	local:iso/Win10_21H1_French_x64.iso,media=cdrom,siz...

Drag and drop to reorder

Buttons: ? Help, OK

Vous devrez ensuite, lors du démarrage de vos machines, cliquer sur l'option indiquée ci-dessous pour répertorier vos machines sur votre FOG.  
Attention : pour Windows, vous devrez modifier une autre option dans Proxmox, à savoir le BIOS, en le passant de UEFI à SeaBIOS.

```
Host is NOT registered!
```

```
-----  
Boot from hard disk
```

```
Run Memtest86+
```

```
Perform Full Host Registration and Inventory
```

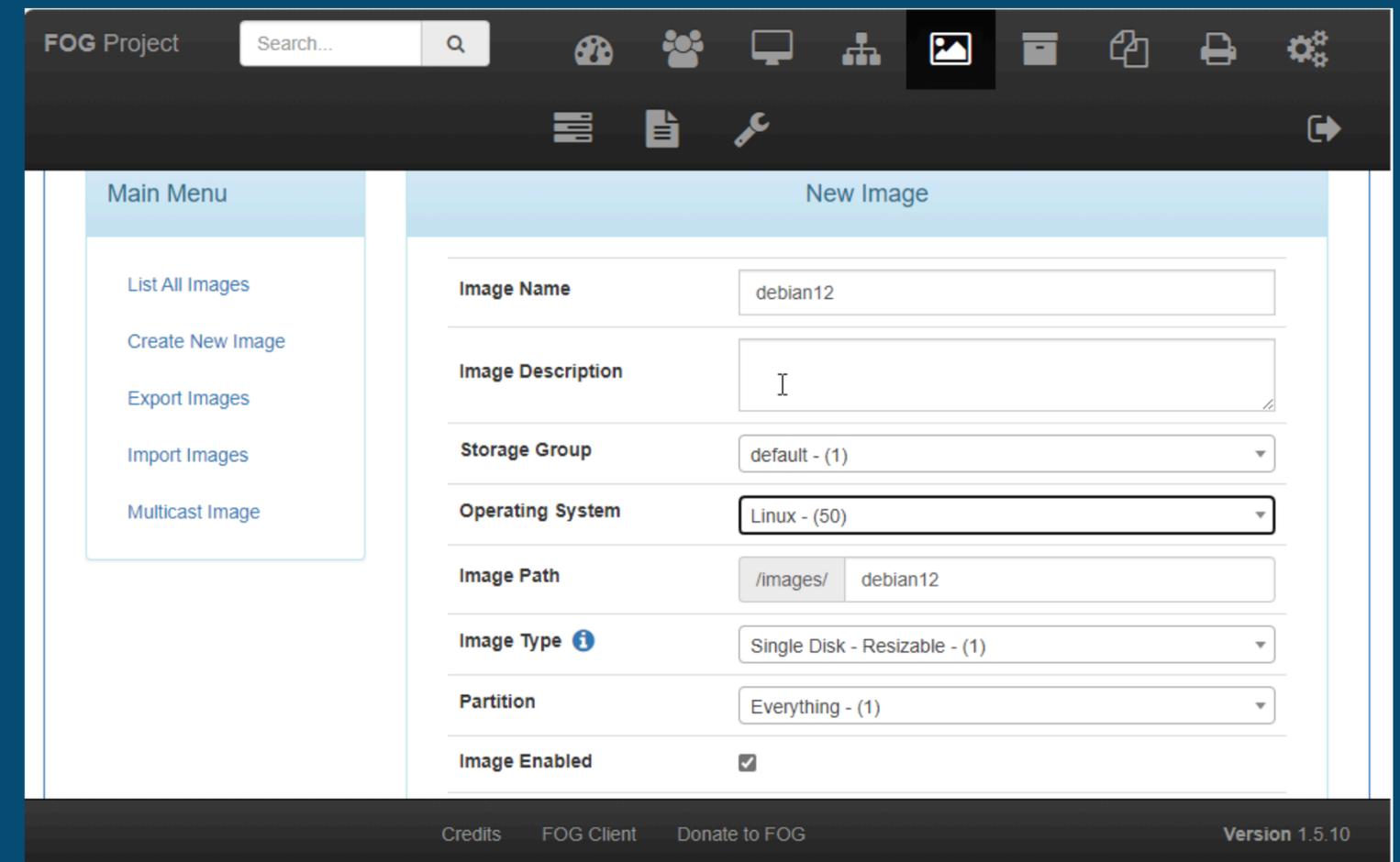
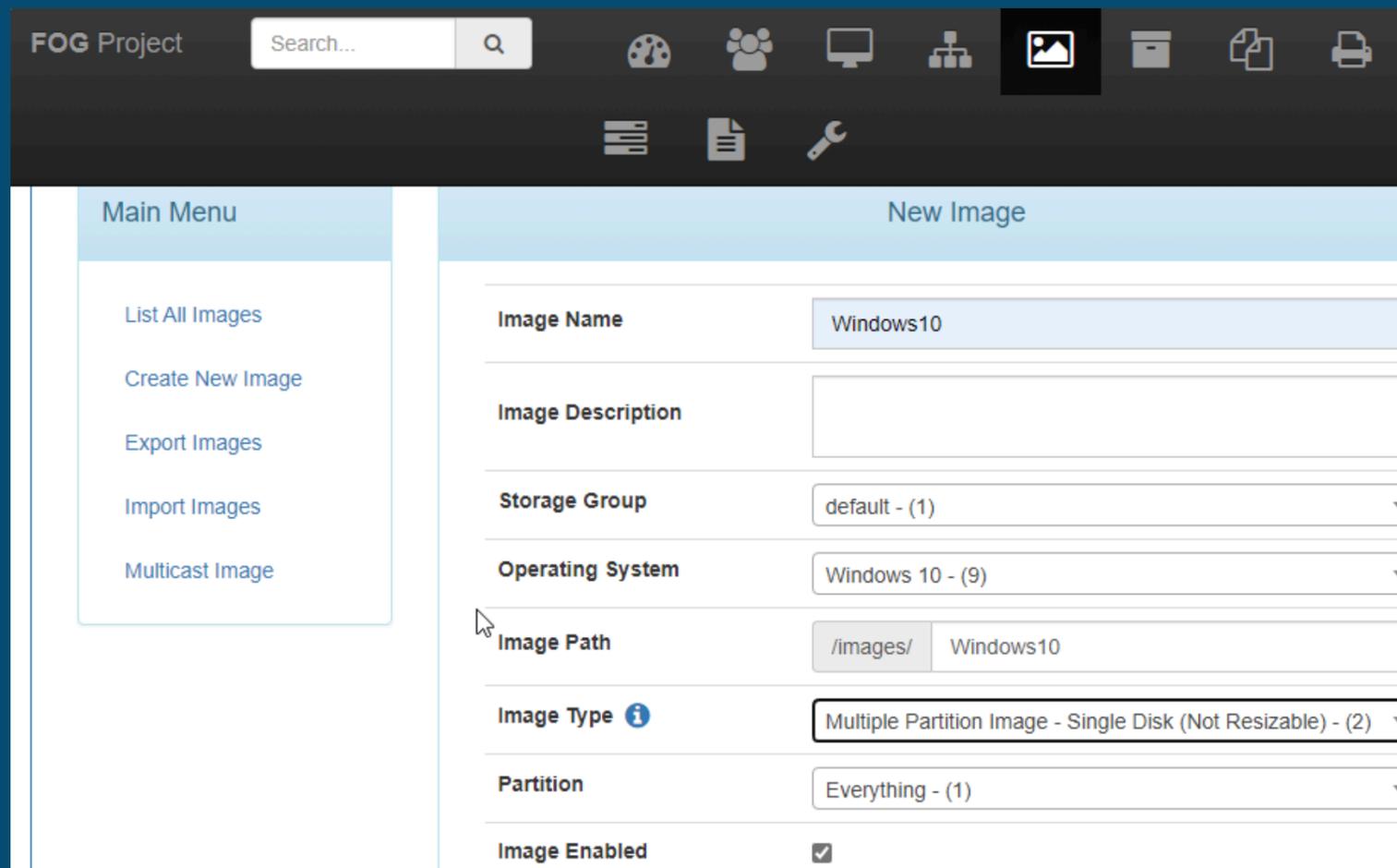
```
Quick Registration and Inventory
```

```
Deploy Image
```

```
Join Multicast Session
```

```
Client System Information (Compatibility)
```

Nous allons ensuite créer nos deux images, Windows et Debian, dans le menu Image > Create New Image.



Nous allons ensuite capturer l'image de nos deux machines en allant dans la liste de nos Hosts, puis en cliquant sur Capture pour chacune d'elles.

The screenshot displays the 'Host Management' interface. On the left is a 'Main Menu' with options: 'List All Hosts', 'Create New Host', 'Export Hosts', and 'Import Hosts'. The main area is titled 'All Hosts' and contains a table with columns: Host, Imaged, Task, and Assigned Image. Each column has a search input field. The table lists two hosts: 'debian12' and 'windows10-test'. The 'windows10-test' host has a red warning icon in the status column.

	<input type="checkbox"/>		Host	Imaged	Task	Assigned Image
			<input type="text" value="Search..."/>	<input type="text" value="Search..."/>		<input type="text" value="Search..."/>
?	<input type="checkbox"/>		debian12 bc:24:11:85:0d:28	2024-12-12 10:59:47		debian12
?	<input type="checkbox"/>		windows10-test bc:24:11:ab:94:88	2024-12-13 13:11:46		Windows10

En redémarrant vos clients, vous verrez une interface de ce type se lancer. Cela correspond au temps nécessaire pour que votre client communique avec le serveur et détermine les actions à effectuer.

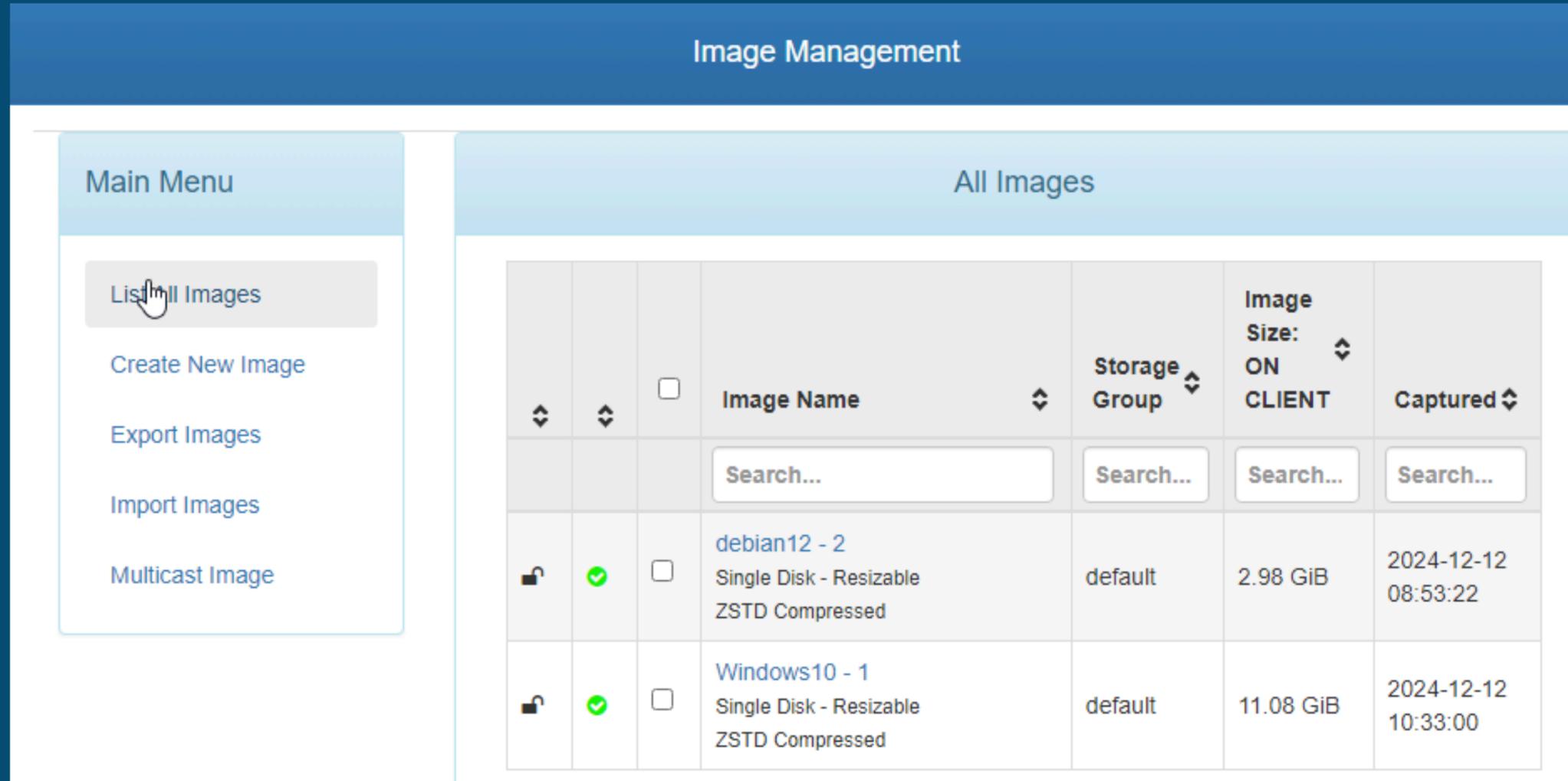
```
[Link:up, TX:0 TXE:0 RX:0 RXE:0]
Configuring (net0 bc:24:11:85:0d:28)..... ok
net0: 192.168.20.11/255.255.255.0
Next server: 192.168.20.48
Filename: undionly.kkpxe
tftp://192.168.20.48/undionly.kkpxe... ok
undionly.kkpxe : 103589 bytes [PXE-NBP]
PXE->EB: !PXE at 9C6C:0710, entry point at 9C6C:0160
        UNDI code segment 9C6C:0802, data segment 9CF0:2CE0 (625-639kB)
        UNDI device is PCI 00:12.0, type DIX+802.3
        625kB free base memory after PXE unload
iPXE initialising devices...ok

iPXE 1.21.1+ (g47159) -- Open Source Network Boot Firmware -- https://ipxe.org
Features: DNS FTP HTTP HTTPS iSCSI NFS TFTP VLAN AoE ELF MBOOT PXE bzImage Menu
PXEXT
Configuring (net0 bc:24:11:85:0d:28)..... ok
Received DHCP answer on interface net0
tftp://192.168.20.48/default.ipxe... ok
http://192.168.20.48/fog/service/ipxe/boot.php... ok
bzImage... ok
init.xz... ok
_
```

Vous verrez ensuite une interface comme celle-ci se lancer, le temps que la capture d'image soit effectuée.

Partclone	Partclone
Starting to clone device (/dev/sda1) to image (/tmp/pigz1) note: Storage Location 192.168.20.48:/images/dev/, Image name debian12 Reading Super Block Calculating bitmap... Please wait... done! File system: EXTFS Device size: 3.2 GB = 781769 Blocks Space in use: 2.0 GB = 479674 Blocks Free Space: 1.2 GB = 302095 Blocks Block size: 4096 Byte	Starting to clone device (/dev/sda3) to image (/tmp/pigz1) note: Storage Location 192.168.20.48:/images/dev/, Image name Windows10 Reading Super Block Calculating bitmap... Please wait... done! File system: NTFS Device size: 11.2 GB = 2739499 Blocks Space in use: 10.7 GB = 2621559 Blocks Free Space: 483.1 MB = 117940 Blocks Block size: 4096 Byte
Elapsed: 00:00:05 Remaining: 00:01:05 Rate: 1.67GB/min Current Block: 34051 Total Block: 781769	Elapsed: 00:04:10 Remaining: 00:02:55 Rate: 1.51GB/min Current Block: 1601092 Total Block: 2739499
Data Block Process: 7.10%	Data Block Process: 58.77%
Total Block Process: 4.36%	Total Block Process: 58.44%

Une fois cela fait, si vous retournez sur votre FOG, vous verrez que vos images ont bien été stockées.



The screenshot displays the 'Image Management' interface. On the left is a 'Main Menu' with options: 'List All Images' (highlighted), 'Create New Image', 'Export Images', 'Import Images', and 'Multicast Image'. The main area is titled 'All Images' and contains a table with columns for 'Image Name', 'Storage Group', 'Image Size: ON CLIENT', and 'Captured'. Below the table are search filters for each column. Two images are listed: 'debian12 - 2' and 'Windows10 - 1', both with a status of 'Single Disk - Resizable ZSTD Compressed' and a 'default' storage group.

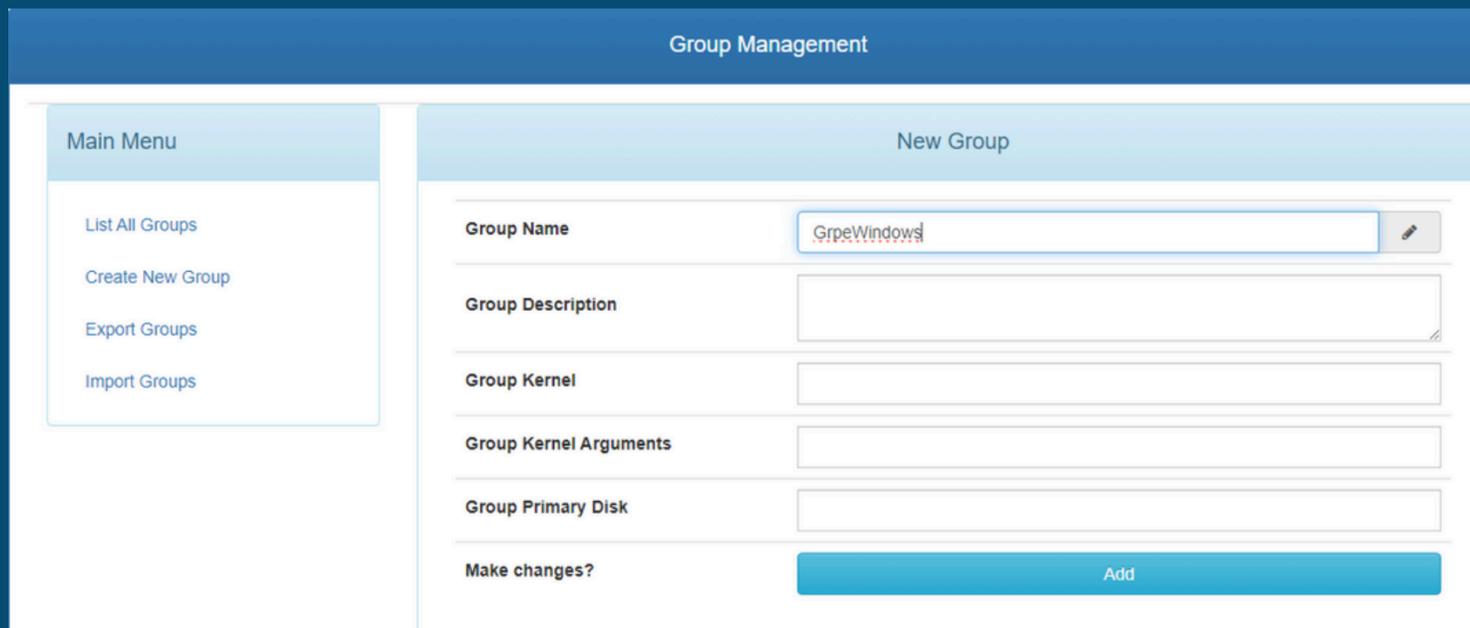
			Image Name	Storage Group	Image Size: ON CLIENT	Captured
			Search...	Search...	Search...	Search...
🔒	✅	<input type="checkbox"/>	debian12 - 2 Single Disk - Resizable ZSTD Compressed	default	2.98 GiB	2024-12-12 08:53:22
🔒	✅	<input type="checkbox"/>	Windows10 - 1 Single Disk - Resizable ZSTD Compressed	default	11.08 GiB	2024-12-12 10:33:00

Pour changer le répertoire cible, rendez-vous dans Storage > All Storage Nodes > Default Member, puis modifiez le Image Path avec le nouveau répertoire souhaité.

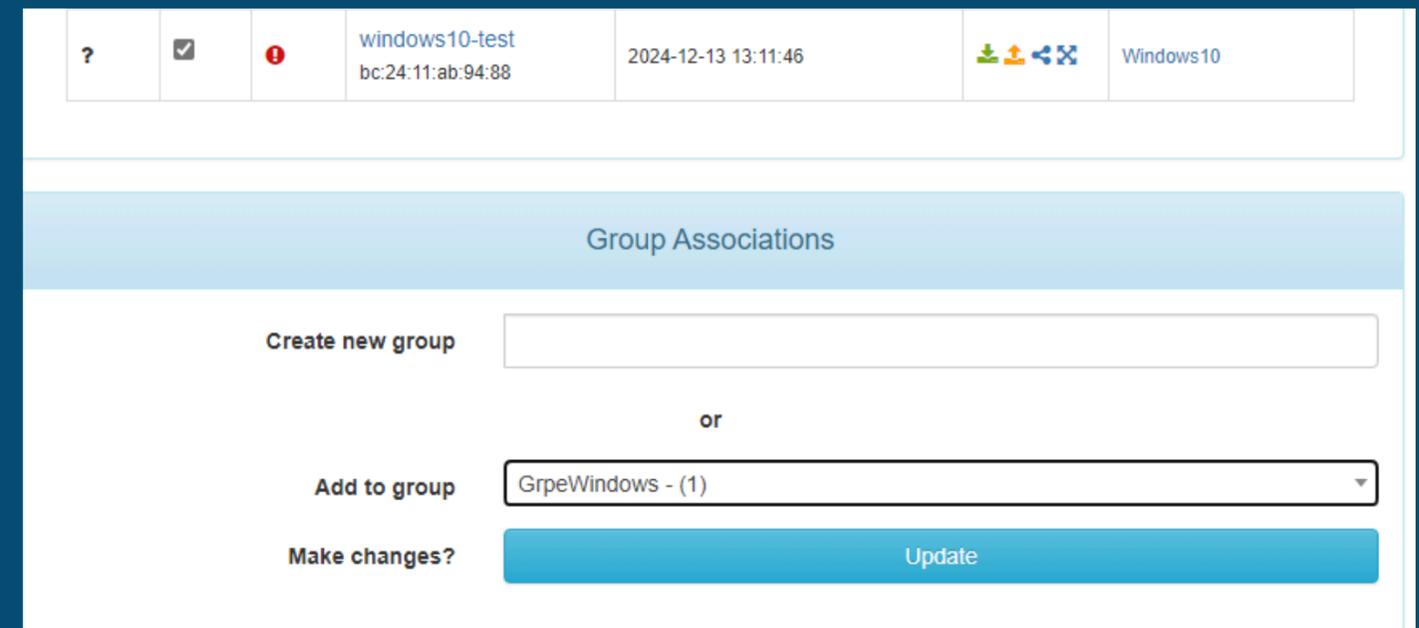
The screenshot displays the configuration page for a storage node in the Fog Project management interface. On the left, a navigation menu is visible with the following items: 'All Storage Nodes', 'Add Storage Node', 'All Storage Groups', and 'Add Storage Group'. The main content area shows the configuration for the 'DefaultMember' storage node. The fields are as follows:

Storage Node Name	DefaultMember
Storage Node Description	Auto generated fog nfs group member
IP Address	192.168.20.48
Web root	/fog
Max Clients	10
Is Master Node	<input checked="" type="checkbox"/> ?
Replication Bandwidth (Kbps)	? 0
Storage Group	default - (1)
Image Path	/images
FTP Path	/images

Passons maintenant au déploiement. Pour commencer, créons un groupe dans lequel nous ajouterons nos deux machines Windows.



The screenshot shows the 'Group Management' interface. On the left is a 'Main Menu' with options: 'List All Groups', 'Create New Group', 'Export Groups', and 'Import Groups'. The main area is titled 'New Group' and contains a form with the following fields: 'Group Name' (containing 'GrpeWindows'), 'Group Description', 'Group Kernel', 'Group Kernel Arguments', and 'Group Primary Disk'. At the bottom of the form is a blue button labeled 'Add'.



The screenshot shows the 'Group Associations' interface. At the top is a table with the following data:

?	<input checked="" type="checkbox"/>		windows10-test bc:24:11:ab:94:88	2024-12-13 13:11:46		Windows10
---	-------------------------------------	--	-------------------------------------	---------------------	--	-----------

Below the table is a form with the following elements: 'Create new group' (input field), 'or', 'Add to group' (dropdown menu showing 'GrpeWindows - (1)'), and 'Make changes?' (blue button labeled 'Update').

Nous allons ensuite nous rendre dans le menu Host et ajouter nos machines dans le groupe approprié.

Pour le déploiement en unicast, vous avez ensuite deux options :

- Déployer depuis FOG en allant dans le menu Host, puis en cliquant sur Deploy.
- Déployer depuis le menu FOG de votre client en cliquant sur Deploy Image et en sélectionnant l'image souhaitée.

Active Tasks

||

<input type="checkbox"/>	Started By: ▾	Hostname MAC ▾	Image Name ▾	Start Time ▾	Working with node ▾	Status ▾
	<input type="text" value="Search..."/>					
<input type="checkbox"/>	fog	debian12	debian12	2024-12-12 10:49:25	DefaultMember	

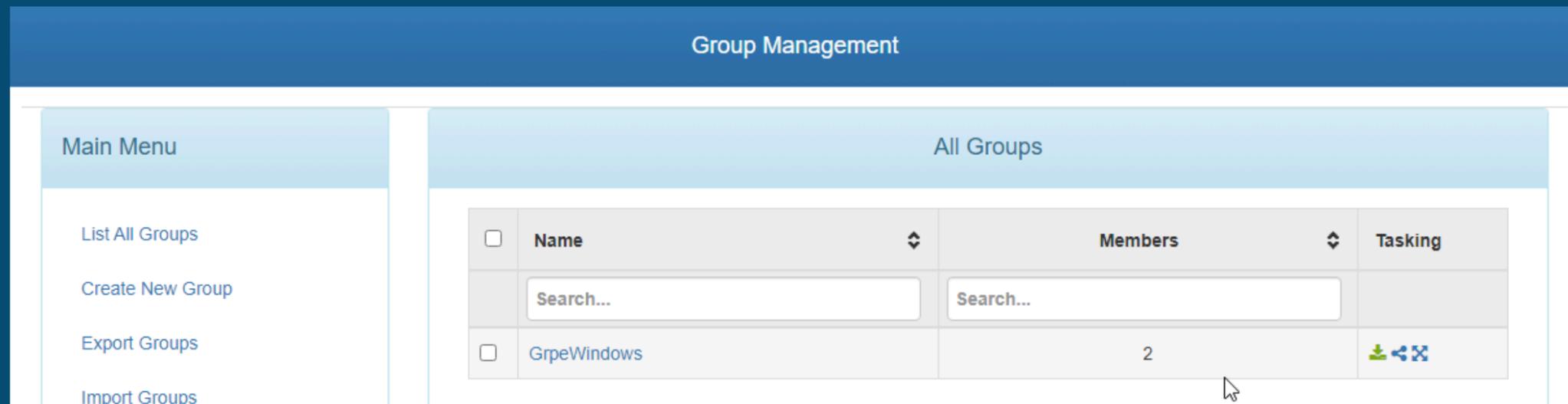
00:00:30/00:00:04    86%    1.574 GiB of 2.982 GiB

```
Host is registered as debian12!  
-----  
Boot from hard disk (1)  
Run Memtest86+  
Update Product Key  
Deploy Image  
Join Multicast Session  
Quick Host Deletion  
Client System Information (Compatibility)
```

**F** FOG Project  
Open Source Computer Cloning Solution



En multicast ce n'est pas beaucoup plus compliquer il vous suffit d'aller dans  
Group>List All Groups puis de cliquer sur deploy



The screenshot displays the 'Group Management' interface. On the left is a 'Main Menu' with options: 'List All Groups', 'Create New Group', 'Export Groups', and 'Import Groups'. The main area is titled 'All Groups' and contains a table with columns: 'Name', 'Members', and 'Tasking'. There are search boxes under the 'Name' and 'Members' headers. The table lists one group: 'GrpeWindows' with 2 members. A mouse cursor is pointing at the '2' in the 'Members' column. The 'Tasking' column for 'GrpeWindows' contains icons for deployment, refresh, and delete.

<input type="checkbox"/>	Name	Members	Tasking
	<input type="text" value="Search..."/>	<input type="text" value="Search..."/>	
<input type="checkbox"/>	GrpeWindows	2	

