

XenLiveCD & XenEnterprise

Xen LiveCd

- Zawiera obrazy trzech dystrybucji:
 - OpenSuse10.0
 - Debian Etch
 - CentOS 4.1
- w trybach graficznych (GNOME) oraz tekstowych.

Po bootowaniu z LiveCD GRUB daje nam następujące możliwości:

```
GNU GRUB  version 0.97  (638K lower / 296896K upper memory)
```

```
Debian-based Dom0 (from testing)
Debian-based Dom0 in text mode (from testing)
CentOS-4.1-based Dom0
CentOS-4.1-based Dom0 in text mode
OpenSUSE-10.0-based Dom0
OpenSUSE-10.0-based Dom0 in text mode
Debian on Native Kernel 2.6.16 (from testing) (text mode only)
```

Use the ↑ and ↓ keys to select which entry is highlighted.
Press enter to boot the selected OS, 'e' to edit the
COMMANDS before booting, or 'c' for a COMMAND-line.

The highlighted entry will be booted automatically in 9 seconds.

Scenariusz do bootowania LiveCd na maszynie z 256MB RAM

- Bootowanie Debian
- Próba stworzenia nowego monitora
 - `# xm create -c /root/deb-conf name=za_malo_pamieci`
- Za mało wolnej pamięci (System posiada 256MB, Dom0 wykorzystuje 88% zasobów systemowych)
 - Przeciwdziałanie – Zmuszenie Dom0 do pracy przy mniejszej ilości RAM
 - `# xm mem-set 0 98`
 - Ponowienie próby stworzenia nowego systemu
 - `#xm create -c /root/deb-conf name=powstanie_uspiony`
system jest stworzony lecz powstaje uśpiony
`# xm domid powstanie_uspiony`
2
`# xm unpause 2`

Virtual Machine Status

```
xentop - 21:18:21 Xen 3.0.3.0
1 domains: 1 running, 0 blocked, 0 paused, 0 crashed, 0 dying, 0 shutdown
Mem: 298556k total, 279600k used, 18956k free CPUs: 1 @ 2601MHz
```

	NAME	STATE	CPU(sec)	CPU(%)	MEM(k)	MEM(%)	MAXMEM(k)	MAXMEM(%)	VCPUS	NETS	NETTX(k)	NETRX(k)	VBDS
	VBD_OO	VBD_RD	VBD_WR	SSID									
Domain-0	----	r	196	14.3	263896	88.4	no limit	n/a	1	4	0	0	0
	0	0	0	0									

Delay Networks vBds VCPUs Repeat header Sort order Quit

xterm

Welcome to the Xen Live CD v1.6!

To start a Debian 'etch' guest, type:

```
# xm create -c /root/deb-conf name=my-vm-name
```

To start a CentOS 4.1 guest, type:

```
# xm create -c /root/centos-conf name=my-vm-name
```

To start an OpenSUSE 10.0 guest, type:

```
# xm create -c /root/opensuse-conf name=my-vm-name
```

```
localhost:~# xm create -c /root/deb-conf name=deb_zs_malopanieci
Using config file "/root/deb-conf".
```

█

```
Virtual Machine Status
xentop - 21:18:51 Xen 3.0.3.0
1 domains: 1 running, 0 blocked, 0 paused, 0 crashed, 0 dying, 0 shutdown
Mem: 298556k total, 279600k used, 18956k free CPUs: 1 @ 2601MHz
```

NAME	STATE	CPU(sec)	CPU(%)	MEM(k)	MEM(%)	MAXMEM(k)	MAXMEM(%)	VCPUS	NETS	NETTX(k)	NETRX(k)	VBDS
VBD_00	VBD_RD	VBD_WR	SSID									
Domain-0	-----r	197	3.4	263896	88.4	no limit	n/a	1	4	0	0	0
0	0	0	0									

Delay Networks vBds CPUs Repeat header Sort order Quit

```
xterm
Welcome to the Xen Live CD v1.6!

To start a Debian 'etch' guest, type:
# xm create -c /root/deb-conf name=my-vm-name

To start a CentOS 4.1 guest, type:
# xm create -c /root/centos-conf name=my-vm-name

To start an OpenSUSE 10.0 guest, type:
# xm create -c /root/opensuse-conf name=my-vm-name

localhost:~# xm create -c /root/deb-conf name=deb_za_malopanieci
Using config file "/root/deb-conf".
Error: I need 98304 KiB, but dom0_min_mem is 262144 and shrinking to 262144 KiB
would leave only 20708 KiB free.
localhost:~#
```

```
Virtual Machine Status
xentop - 21:33:55 Xen 3.0.3.0
1 domains: 1 running, 0 blocked, 0 paused, 0 crashed, 0 dying, 0 shutdown
Mem: 298556k total, 279600k used, 18956k free CPUs: 1 @ 2601MHz

```

NAME	STATE	CPU(sec)	CPU(%)	MEM(k)	MEM(%)	MAXMEM(k)	MAXMEM(%)
VBD_OO	VBD_RD	VBD_WR	SSID				
Domain-0	-----r	219	3.4	263896	88.4	no limit	
0	0	0	0				

```
Delay Networks vifs CPUs Repeat header Sort order Quit
```

```
xterm
Welcome to the Xen Live CD v1.6!

To start a Debian 'etch' guest, type:
# xm create -c /root/deb-conf name=my-vm-name

To start a CentOS 4.1 guest, type:
# xm create -c /root/centos-conf name=my-vm-name

To start an OpenSUSE 10.0 guest, type:
# xm create -c /root/opensuse-conf name=my-vm-name

localhost:~# xm create -c /root/deb-conf name=deb_za_malopanieci
Using config file "/root/deb-conf".
Error: I need 98304 KiB, but dom0_min_mem is 262144 and shrinking to 262144 KiB
would leave only 20708 KiB free.
localhost:~# xm mem-set 0 98
localhost:~#
```

```
xentop - 21:35:25 Xen 3.0.3.0
1 domains: 1 running, 0 blocked, 0 paused, 0 crashed, 0 dying, 0 shutdown
Mem: 298556k total, 116056k used, 182500k free CPUs: 1 @ 2601MHz
```

NAME	STATE	CPU(sec)	CPU(%)	MEM(k)	MEM(%)	MAXMEM(k)	MAXMEM(%)
VBD_OO	VBD_RD	VBD_WR	SSID				
Domain-0	-----r	240	3,2	100352	33,6	no limit	
0	0	0	0				

Delay Networks vifs CPUs Repeat header Sort order Quit

```
xterm
Welcome to the Xen Live CD v1.6!

To start a Debian 'etch' guest, type:
# xm create -c /root/deb-conf name=my-vm-name

To start a CentOS 4.1 guest, type:
# xm create -c /root/centos-conf name=my-vm-name

To start an OpenSUSE 10.0 guest, type:
# xm create -c /root/opensuse-conf name=my-vm-name

localhost:~# xm create -c /root/deb-conf name=deb_za_malopamieci
Using config file "/root/deb-conf".
Error: I need 98304 KiB, but dom0_min_mem is 262144 and shrinking to 262144 KiB
would leave only 20708 KiB free.
localhost:~# xm mem-set 0 98
localhost:~# xm create -c /root/deb-conf name=powstanie_uspiony
```

- Home
- File System
- Autostart


```
xentop - 21:37:55 Xen 3.0.3.0
2 domains: 1 running, 0 blocked, 0 paused, 0 crashed, 0 dying, 0 shutdown
Mem: 298556k total, 213080k used, 85476k free CPUs: 1 @ 2601MHz
```

NAME	STATE	CPU(sec)	CPU(%)	MEM(k)	MEM(%)	MAXMEM(k)	MAXMEM(%)
Domain-0	-----r	285	11,8	100584	33,7	no limit	
powstanie_uspiony	-----	25	77,9	96792	32,4	98304	

```

VBD_OO VBD_RD VBD_WR SSID
Delay Networks vdis CPUs Repeat header Sort order Quit
```

```
xterm
To start a Debian 'etch' guest, type:
# xm create -c /root/deb-conf name=my-vm-name

To start a CentOS 4.1 guest, type:
# xm create -c /root/centos-conf name=my-vm-name

To start an OpenSUSE 10.0 guest, type:
# xm create -c /root/opensuse-conf name=my-vm-name

localhost:~# xm create -c /root/deb-conf name=deb_za_malopanieci
Using config file "/root/deb-conf".
Error: I need 98304 KiB, but dom0_min_mem is 262144 and shrinking to 262144 KiB
would leave only 20708 KiB free.
localhost:~# xm mem-set 0 98
localhost:~# xm create -c /root/deb-conf name=powstanie_uspiony
Using config file "/root/deb-conf".
Started domain powstanie_uspiony
i8042.c: No controller found.
Loading, please wait...
INIT: version 2.86 booting
hostname: the specified hostname is invalid
Starting the hotplug events dispatcher: udevd.
Synthesizing the initial hotplug events...done.
Waiting for /dev to be fully populated...█
```

```

Virtual Machine Status
xentop - 21:43:55 Xen 3.0.3.0
2 domains: 1 running, 0 blocked, 0 paused, 0 crashed, 0 dying, 0 shutdown
Mem: 298556k total, 213080k used, 85476k free CPUs: 1 @ 2601MHz

```

NAME	STATE	CPU(sec)	CPU(%)	MEM(k)	MEM(%)	MAXMEM(k)	MAXMEM(%)	VCPUS	NETS	NETTX(k)	NETRX(k)
Domain-0	-----r	299	2.1	100584	33.7	no limit	n/a	1	4	0	0
powstanie_uspiony	-----	370	97.9	96792	32.4	98304	32.9	1	1	1	1

```

Delay Networks vdis vCPUs Repeat header Sort order Quit

```

```

xterm
To start a CentOS 4.1 guest, type:
# xm create -c /root/centos-conf name=my-vm-name

To start an OpenSUSE 10.0 guest, type:
# xm create -c /root/opensuse-conf name=my-vm-name

localhost:~# xm create -c /root/deb-conf name=deb_zamalopanieci
Using config file "/root/deb-conf".
Error: I need 98304 KiB, but dom0_min_mem is 262144 and shrinking to 262144 KiB
would leave only 20708 KiB free.
localhost:~# xm mem-set 0 98
localhost:~# xm create -c /root/deb-conf name=powstanie_uspiony
Using config file "/root/deb-conf".
Started domain powstanie_uspiony
i8042.c: No controller found.
Loading, please wait...
INIT: version 2.86 booting
hostname: the specified hostname is invalid
Starting the hotplug events dispatcher: udevd.
Synthesizing the initial hotplug events...done.
Waiting for /dev to be fully populated...done.
Activating swap...done.
Checking root file system...fsck 1.39 (29-May-2006)
/tmp/rootdev: clean, 34131/125184 files, 133922/250000 blocks
done.
Setting the system clock..
Cleaning up ifupdown....
Loading modules...done.
Setting the system clock again..
Loading device-mapper support.
Checking file systems...fsck 1.39 (29-May-2006)
done.
Setting kernel variables...done.
Mounting local filesystems...done.
Activating swapfile swap...done.
Setting up networking....
Configuring network interfaces...Internet Systems Consortium DHCP Client V3.0.4
Copyright 2004-2006 Internet Systems Consortium.
All rights reserved.
For info, please visit http://www.isc.org/sw/dhcp/

Listening on LPF/eth0/00:16:3e:58:02:12
Sending on LPF/eth0/00:16:3e:58:02:12
Sending on Socket/fallback
DHCPOFFER from 10.0.6.128
DHCPCREQUEST on eth0 to 255.255.255.255 port 67
DHCPCPACK from 10.0.6.128
bound to 10.0.6.1 -- renewal in 18489 seconds.
done.
INIT: Entering runlevel: 3
Starting system log daemon: syslogd.
Starting kernel log daemon: klogd.
Starting Name Service Cache Daemon: nscd.
Starting internet superserver: no services enabled, inetd not started.
Starting periodic command scheduler....
Starting GNOME Display Manager: gdm

```

Virtual Machine Status

```
xentop - 21:47:55 Xen 3.0.3.0
2 domains: 1 running, 1 blocked, 0 paused, 0 crashed, 0 dying, 0 shutdown
Mem: 298556k total, 212924k used, 85632k free CPUs: 1 @ 2601MHz
```

NAME	STATE	CPU(sec)	CPU(%)	MEM(k)	MEM(%)	MAXMEM(k)	MAXMEM(%)	VCPUS	NETS	NETTX(k)	NETRX(k)	VBDs
VBD_00	VBD_RD	VBD_WR	SSID									
Domain-0	-----r	347	28,5	100404	33,6	no limit	n/a	1	4	0	0	
powstanie_uspiony	--b---	393	1,6	96816	32,4	98304	32,9	1	1	150		

Delay Networks VBDs VCPUs Repeat header Sort order Quit

xterm

```
Using config file "/root/deb-conf".
Error: I need 98304 KiB, but dom0_min_mem is 262144 and shrinking to 262144 KiB
would leave only 20708 KiB free.
localhost:~# xm mem-set 0 98
localhost:~# xm create -c /root/deb-conf name=powstanie_uspiony
Using config file "/root/deb-conf".
Started domain powstanie_uspiony
i8042.c: No controller found.
Loading, please wait...
INIT: version 2.86 booting
hostname: the specified hostname is invalid
Starting the hotplug events dispatcher: udevd.
Synthesizing the initial hotplug events...done.
Waiting for /dev to be fully populated...done.
Activating swap...done.
Checking root file system...fsck 1,39 (29-May-2006)
/tmp/rootdev: clean, 34131/125184 files, 133922/250000 blocks
done.
Setting the system clock..
Cleaning up ifupdown....
Loading modules...done.
Setting the system clock again..
Loading device-mapper support.
Checking file systems...fsck 1,39 (29-May-2006)
done.
Setting kernel variables...done.
Mounting local filesystems...done.
Activating swapfile swap...done.
Setting up networking....
Configuring network interfaces...Internet Systems Consortium DHCP Client V3.0.4
Copyright 2004-2006 Internet Systems Consortium.
All rights reserved.
For info, please visit http://www.isc.org/sw/dhcp/

Listening on LPF/eth0/00:16:3e:58:02:12
Sending on LPF/eth0/00:16:3e:58:02:12
Sending on Socket/Fallback
DHCPDISCOVER on eth0 to 255.255.255.255 port 67 interval 3
DHCPOFFER from 10.0.6.128
DHCPREQUEST on eth0 to 255.255.255.255 port 67
DHCPCACK from 10.0.6.128
bound to 10.0.6.1 -- renewal in 18489 seconds.
done.
INIT: Entering runlevel: 3
Starting system log daemon: syslogd.
Starting kernel log daemon: klogd.
Starting Name Service Cache Daemon: nscd.
Starting internet superserver: no services enabled, inetd not started.
Starting periodic command scheduler....
Starting GNOME Display Manager: gdm.

Welcome to the Xen Live CD version 1.6
Debian GNU/Linux Etch powstanie-uspiony tty1

You can log in as 'root' using password 'xensource'.

powstanie-uspiony login: █
```


VNC: x11

Welcome to Debian Etch on powstanie-uspiony

(Log-in as 'root' with password 'xensource')

Username:

Please enter your username



Virtual Machine Status

```
xentop - 21:53:25 Xen 3.0.3.0
2 domains: 1 running, 0 blocked, 0 paused, 0 crashed, 0 dying, 0 shutdown
Mem: 298556k total, 213080k used, 85476k free CPUs: 1 @ 2601MHz
```

NAME	STATE	CPU(sec)	CPU(%)	MEM(k)	MEM(%)	MAXMEM(k)	MAXMEM(%)	VCPUS	NETS	NETTX(k)	NETRX(k)	VBDs
Domain-0	-----r	448	20.2	100576	33.7	no limit	n/a	1	4	0	0	0
powstanie_uspiony	-----	409	13.8	96800	32.4	98304	32.9	1	1	686		

Delay Networks VBDs VCPUs Repeat header Sort order Quit

xterm

```
Using config file "/root/deb-conf".
Error: I need 98304 KiB, but dom0_min_mem is 262144 and shrinking to 262144 KiB
would leave only 20708 KiB free.
localhost:~# xm mem-set 0 98
localhost:~# xm create -c /root/deb-conf name=powstanie_uspiony
Using config file "/root/deb-conf".
Started domain powstanie_uspiony
i8042.c: No controller found.
Loading, please wait...
INIT: version 2.86 booting
hostname: the specified hostname is invalid
Starting the hotplug events dispatcher: udevd.
Configuring the initial hotplug events...done.
Waiting for /dev to be fully populated...done.
Activating swap...done.
Mounting root file system...fsck 1.39 (29-May-2006)
p/rootdev: clean, 34131/125184 files, 133922/250000 blocks
done.
Setting the system clock..
Bringing up ifupdown....
Loading modules...done.
Setting the system clock again..
Loading device-mapper support.
Mounting file systems...fsck 1.39 (29-May-2006)
done.
Setting kernel variables...done.
Mounting local filesystems...done.
Activating swapfile swap...done.
Bringing up networking....
Figuring network interfaces...Internet Systems Consortium DHCP Client V3.0.4
Copyright 2004-2006 Internet Systems Consortium.
All rights reserved.
For more info, please visit http://www.isc.org/sw/dhcp/

Starting on LPF/eth0/00:16:3e:58:02:12
Starting on LPF/eth0/00:16:3e:58:02:12
Starting on Socket/Fallback
PDISCOVER on eth0 to 255.255.255.255 port 67 interval 3
POFFER from 10.0.6.128
PREREQUEST on eth0 to 255.255.255.255 port 67
PACK from 10.0.6.128
Offered to 10.0.6.1 -- renewal in 18489 seconds.
done.
T: Entering runlevel: 3
Starting system log daemon: syslogd.
Starting kernel log daemon: klogd.
Starting Name Service Cache Daemon: nscd.
Starting internet superserver: no services enabled, inetd not started.
Starting periodic command scheduler....
Starting GNOME Display Manager: gdm.

Welcome to the Xen Live CD version 1.6
Welcome to GNU/Linux Etch powstanie-uspiony tty1

You can log in as 'root' using password 'xensource'.

powstanie-uspiony login: xen
```

VNC: x11

Komendy Xen-a w konsoli

1. Wypisz maszyny zainstalowane na Dom0, wraz z nazwą, statusem i id:

```
# /opt/xensource/bin/xe host-vm-list -u root
```

2. Wypisz konfigurację maszyny wirtualnej

```
# /opt/xensource/bin/xe vm-param-list -u root vm-name=<vm name>
```

```
# /opt/xensource/bin/xe vm-param-list -u root vm-id=<vm UUID>
```

3. Włącz wirtualną maszynę

```
# /opt/xensource/bin/xe vm-start -u root vm-name=<vm name>
```

```
# /opt/xensource/bin/xe vm-start -u root vm-id=<vm UUID>
```

4. Wyłącz wirtualną maszynę

```
# /opt/xensource/bin/xe vm-shutdown -u root vm-name=<vm name>
```

5. Zrestartuj wirtualną maszynę

```
# /opt/xensource/bin/xe vm-reboot -u root vm-name=<vm name>
```

6. Przenieś w stan hibernacji (zawieś)

```
# /opt/xensource/bin/xe vm-suspend -u root vm-name=<vm name>
```

7. Przywróć zawieszoną maszynę

```
# /opt/xensource/bin/xe vm-resume -u root vm-name=<vm name>
```

8. Odinstaluj

```
# /opt/xensource/bin/xe vm-uninstall -u root vm-name=<vm name>
```

XenEnterprise

- Cechy charakterystyczne:
- Składa się z trzech aplikacji:
 - Serwera
 - Klienta (Konsola administratorska)
 - P2V (Physical to Virtual Conversion)

Welcome to XenEnterprise - Version 3.0.0 (#6087)
Copyright XenSource, Inc. 2006

Welcome to XenEnterprise

Please select an operation:

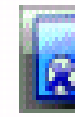
- * Install XenEnterprise Server
- * Upgrade XenEnterprise Server
- * Convert an existing OS on this machine to a XenUM (P2U)

Ok

Exit and reboot

<Tab>/<Alt-Tab> between elements ; <Space> selects ; <F12> next screen

Serwer



Install XenVM



Shutdown



Reboot

- Duże wymagania sprzętowe
- Minimum- 1 GB RAM, 16 GB przestrzeni dyskowej
- Zalecane- >2GB RAM, 60 GB przestrzeni dyskowej
- Instalacja zajmuje cały dysk
- Wirtualizuje także Windows (Intel VT lub AMD Pacifica)
- Jeden lub kilka sterowanych z jednego Administrator Console

Zalety:

- Wśród rozwiązań proponowanych przez XenSource najlepsze rozwiązanie pod względem wydajnościowym
- Bezpośrednie odwołania Xen-a do sprzętu (brak narzutów)

Instalacja jest stosunkowo łatwa, ale kiedy się zakończy

Welcome to the XenEnterprise Installer - Version 3.0.0 (#6087)
Copyright (c) 2006 XenSource, Inc.



<Tab>/<Alt-Tab> between elements ; <Space> selects ; <F12> next screen

XenEnterprise daje nam dostęp do szeregu narzędzi:

Administrator Console

The screenshot displays the XenSource XenEnterprise Administrator Console interface. The window title is "192.168.0.96 XenSource XenEnterprise". The main menu includes "File", "Xen Virtual Machine", "Xen Enterprise Server", and "Help".

The central area features a table with columns for Name, Status, CPU Usage, Used Memory, Disk, and Network. The table contains one entry for the VM "bedrock", which is currently "On".

Name	Status	CPU Usage	Used Memory	Disk	Network
bedrock	On	0 %	12 %	2046 MB	0 KB/s

Below the table, the VM name "bedrock" is displayed, followed by control buttons: "Install XenVM", "Shutdown", and "Reboot".

The interface includes a navigation bar with tabs for "Overview", "Text Console", "Performance", and "History". The "Overview" tab is active, showing a summary of the VM's attributes and physical NICs.

Attributes:

Attribute	Value
Name	bedrock
IP Address	192.168.0.96
Xen Version	3.0.2.3
Installed	Sat Jun 29 02:24:35 PDT 2006
Product Version/Product Build N...	2.0.8/5180
Sockets per Node/Cores per So...	1/1/2

Physical NICs:

Network	Description	NIC	Default
xenbr0		eth0	<input checked="" type="checkbox"/>

Storage:

Disk usage: 2 % (190452 MB)

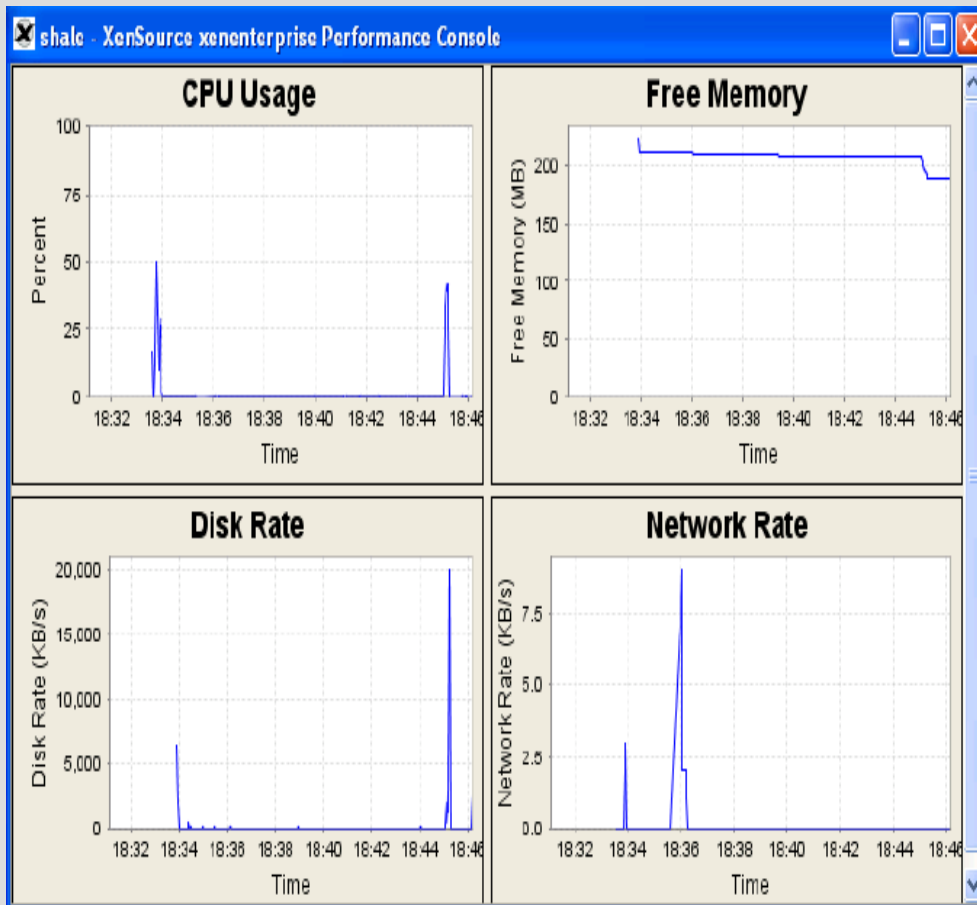
Memory (2046 MB):

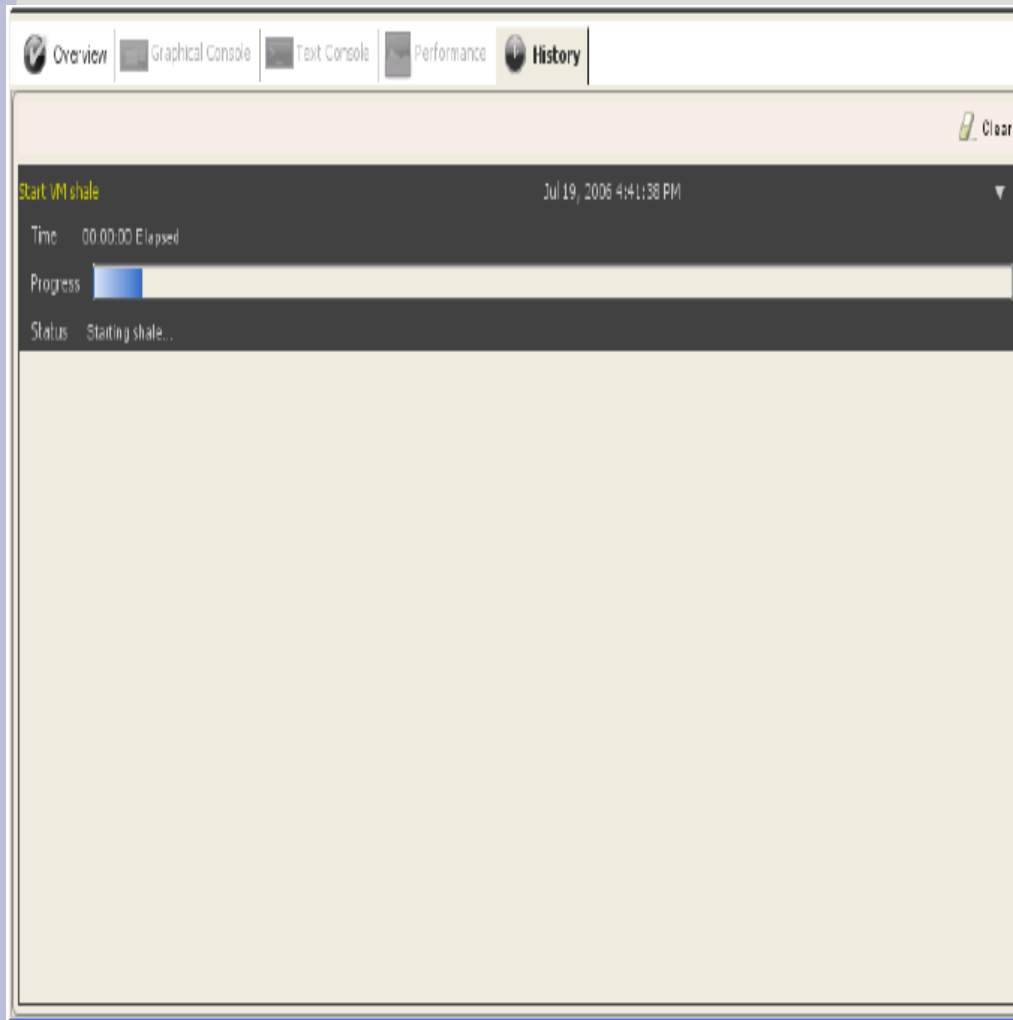
No VMs

At the bottom right of the console, there are "Apply" and "Cancel" buttons.

Umożliwia ona

- -kontrolę wykorzystania zasobów
- -łatwe tworzenie nowych wirtualnych maszyn (KLONOWANIE)





- Historia
- Musi być zainstalowane na zdalnej maszynie, na serwerze
- można wykonywać polecenia za pomocą komend w konsoli

Physical to Virtual Conversion

- Konwertuje lokalny system na obraz systemu
- System jest wysyłany na jeden bądź kilka serwerów

Postłowie

W celu ułatwienia robienia screenshotów, oraz zapewnienia niezbędnych wymagań dla prezentowanych produktów (XenEnterprise wymaga dedykowanego dysku) instalacje oraz symulacje przeprowadzane były na maszynach wirtualnych VMware