

Advanced VMware Workstation

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Agenda

History

Virtualization Market Overview

Why use workstation

Advanced vmx Features

Advanced Networking

Under appreciated features

Overview

Disclaimer

This presentation is from Doc to IVNUA

It is not a representation of Novell opinion

History

Diane Green and Mendel Rosenblum

Hers -Master's degree in naval architecture from MIT

His -Stanford doctorate – original idea for VMware

Paul Maritz and Dr. Stephen Herrod

Shipped first VMware Workstation in 1999

Sold to EMC in 2004 for ~280 million

2008 revenue 1.9 billion

Virtualization Market Overview

- * VMware: 44% (combining ESX and Server)
- * Microsoft: 23% (combining Hyper-V and Virtual Server)

IDC – October 2008

Shipping, real, paid?

License providers

HP (34% market share)

Dell (25%)

IBM (16%)

Note the emphasis is on server products

History

Current product set split into Server/Data Center and Desktop

23 products currently

Desktop is a development ground for server products

Server/Data Center

vSphere 4

vCenter Server (was VirtualCenter)

Server (free)

Lab Manager

Desktop

Workstation and Fusion

Ace and VDi

Why Workstation over Server/Player

Multiple Snapshots

Server has one, player none

Full control

Player lacks network control for example

Nice fat client

And thin client too

Server – great for home webserver and mail server

If you sell, develop, demonstrate or evaluate software
this is too important skimp on.

Workstation 6.5

New and Improved Features

Unity

Record and Replay (software developers mostly)

Win2008 support

Some 3D graphics support for XP guests

Virtual machine streaming

Better installation

Better kernel module compile on Linux

Virtual Network editor on Linux

Conversion wizard

VPC, Symantec etc

vmrun – lots more options

Advanced VMX features

VMX files control individual virtual machines

`/dev/vmnet5 = Vmnet5`

Make sharing VMs easier

Turn things off you don't need

Floppy and DVD for example

Ignore ship sets

`checkpoint.disableCpuCheck = "true"`

Let VMware guess the answers

`msg.autoAnswer = "TRUE"`

Advanced VMX features

Sharing can be tricky

- Sharing suspended VMs can lead to data loss

- Resuming can be impossible when

 - CPU is different

 - Video setting are too different

Try to snapshot when powered off

Try to commit data before suspending

Ignore ship sets

- `checkpoint.disableCpuCheck = "true"`

Use Host Setting

- Linux only display setting

sanbarrow.com

One stop shop for vmx file settings

Categories include

- Virtual hardware (CD, network, video, RAM etc)

- Operating System

 - Which settings work in which OS

- Logging

- GUI (VMware rather than VM)

- BIOS and Chipset

- Remote display

Things you've never heard of in great detail

Dangerous List

Free hard disks

Add as many as you like

Keep a data drive for easy sharing

Keep an extra partition on your machine for shared data

Avoid sharing system disks

Have 4 or 5 DVDs

ISOs are easy to make and can ease data sharing

Have a couple of floppies

Quick and easy read/write vehicles

Set your workgroup names for easy sharing

My Favorites

Stopping the moving MAC

The dreaded “Moved or Copied” question

VMware keep an inventory of VM and know when a vm is started from a new location

Answering “Copied” will get you a new MAC

Many OSs will not like the new mac and may fail silently

uuid.bios = "56 4d 71 93 32 d3 39 e0-d4 98 a6 b5 b2 e8 b4 f9"

ethernet0.generatedAddress = "00:0c:29:e8:b4:f9"

My Favorites

Stopping the moving MAC cont...

Having many machines with the same IP and MAC address can be useful

Write once, use many times, hardcoded IPs inside don't need to change

Always use NAT if you can

Allows the development of an IP scheme that always works regardless of location or network status

Easily allows communication between NATs

Easily allows port forwarding to expose services

More in the networking section

My Favorites

Snapshots and clones

How does a snapshot work?

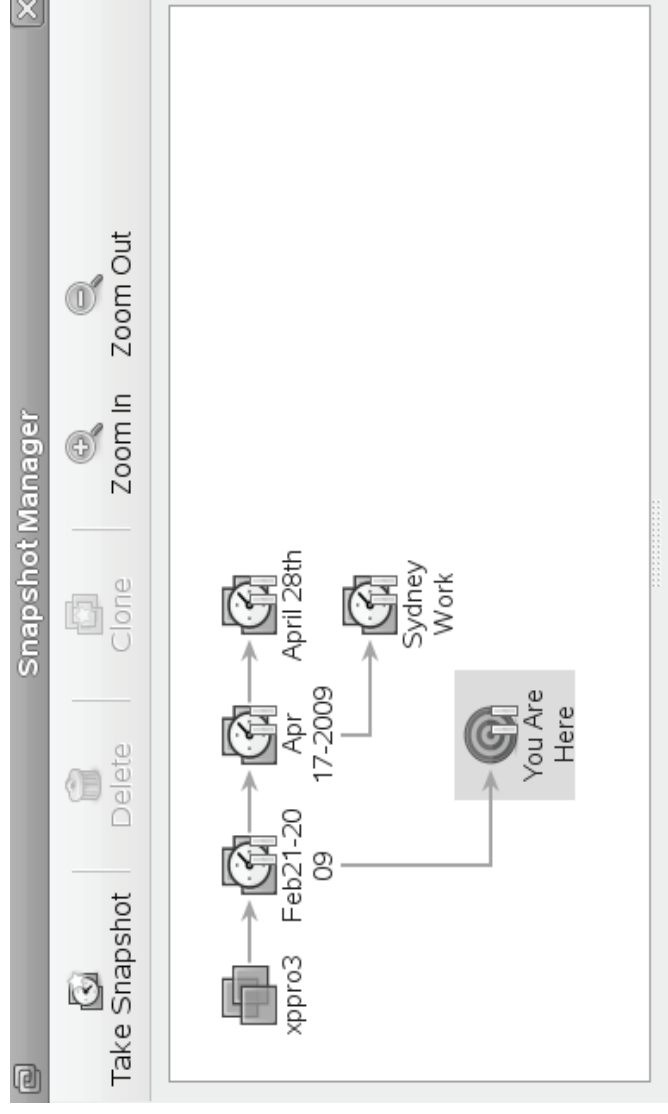
When and Why to Clone

Snapshots become additive and wasteful

Shrink cannot run on Vms with snapshots or linked clones

Ignore the warnings

grow a snapshot tree



More settings tips

Shared folder names do not translate

Always set your escape keys to something besides Ctrl-Alt

Register license with VMware and you can always retrieve it

Participate in the communities

Snapshot often and name them well

Always install from a temporary drive

Save big on expanding drives and shrinks

More settings tips

Display settings can be a killer

The screenshot shows the Windows System Configuration Utility (msconfig) window. The 'Hardware' tab is selected, displaying a list of system components and their status. Below this, the 'Monitors' section is expanded, showing options for host vs. specific monitor settings, the number of monitors (set to 1), and the maximum resolution (set to 1280 x 1024). The '3D Graphics' section is also visible, with the 'Accelerate 3D graphics (DirectX 9.0c)' checkbox checked.

Device	Summary
Memory	1592 MB
Processors	1
Hard Disk (IDE)	60 GB
Hard Disk 2 (IDE)	30 GB
CD/DVD (IDE)	Auto detect
Floppy	Using drive /dev/fd0
Network Adapter	Bridged
USB Controller	Present
Sound Card	Using device /dev/dsp
Display	Auto detect

Monitors

- Use host settings for monitors
- Specify settings for monitors:

Number of monitors: 1

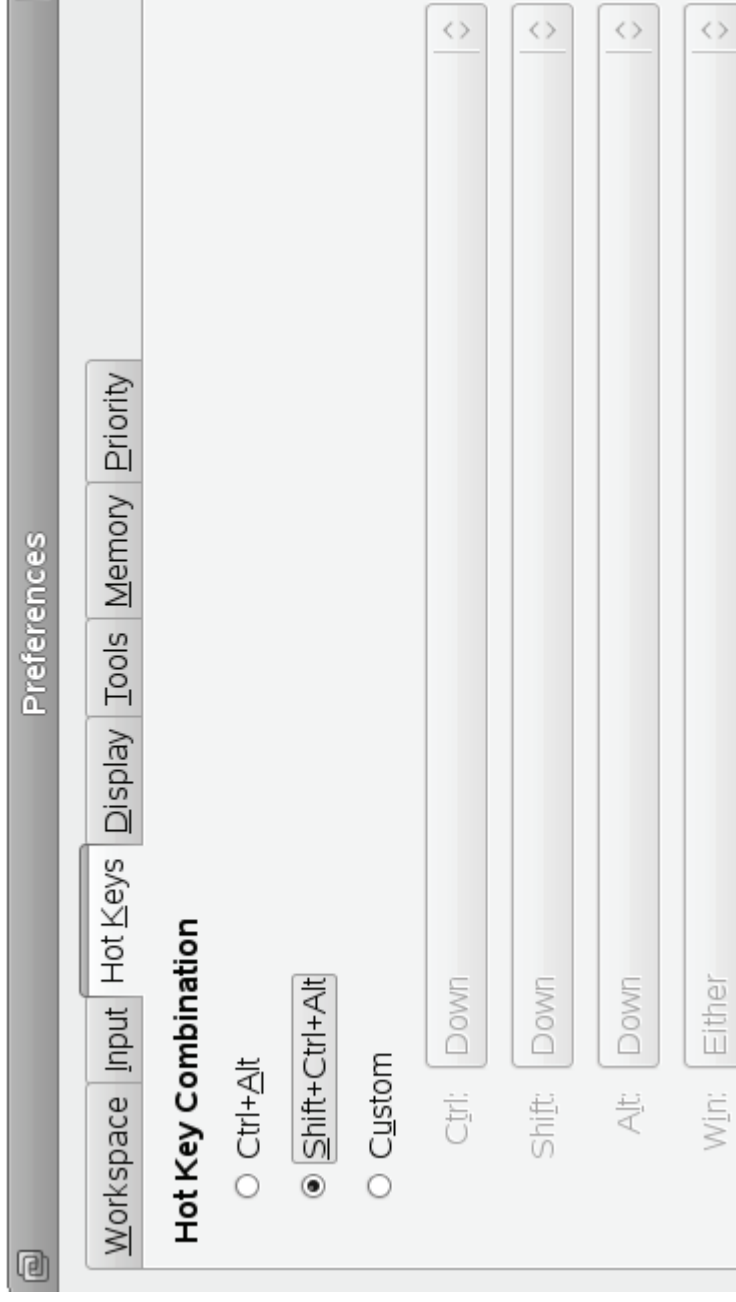
Maximum resolution of any one monitor: 1280 x 1024

3D Graphics

- Accelerate 3D graphics (DirectX 9.0c)

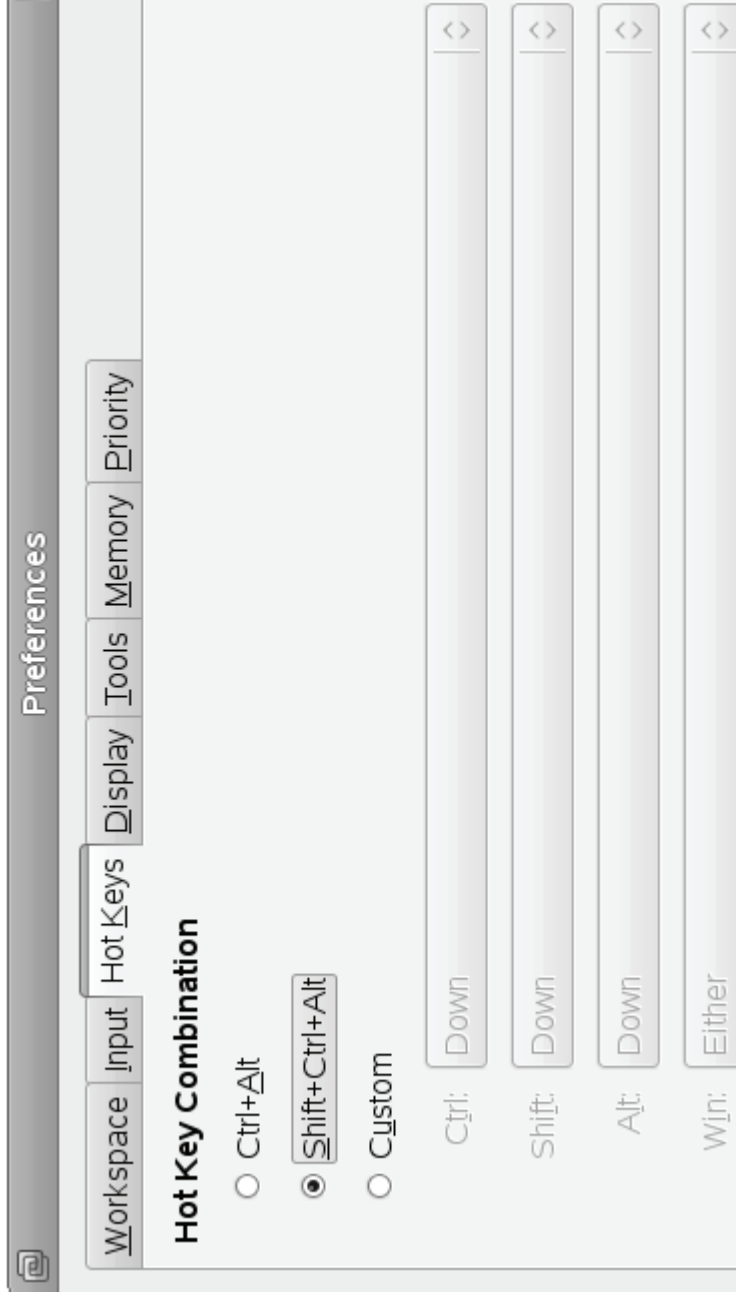
More settings tips

Preferences are for all VMs



More settings tips

Preferences are for all VMs



More settings tips

Preferences are for all Vms

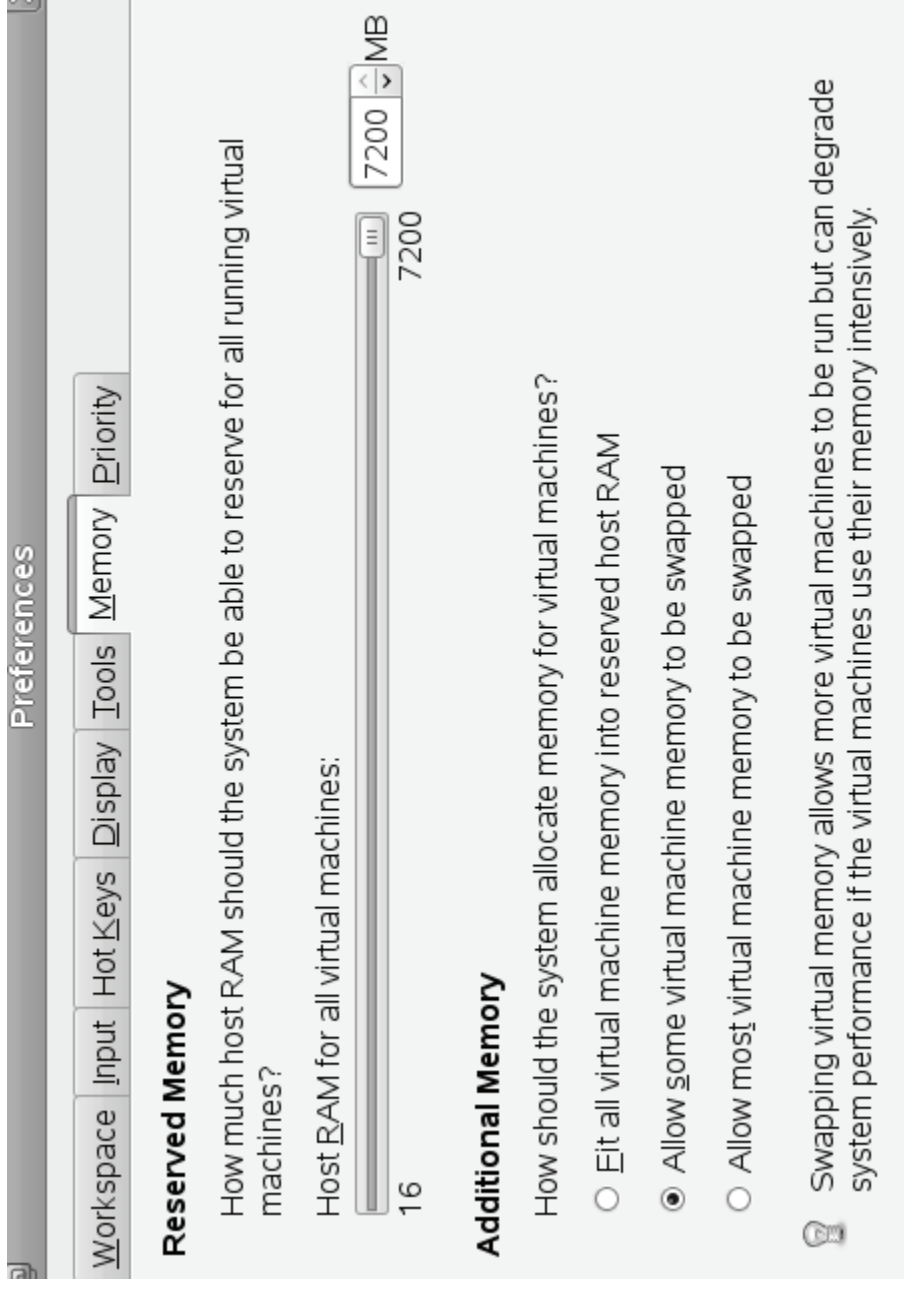
Automatic anything can be dangerous



More settings tips

Preferences are for all Vms

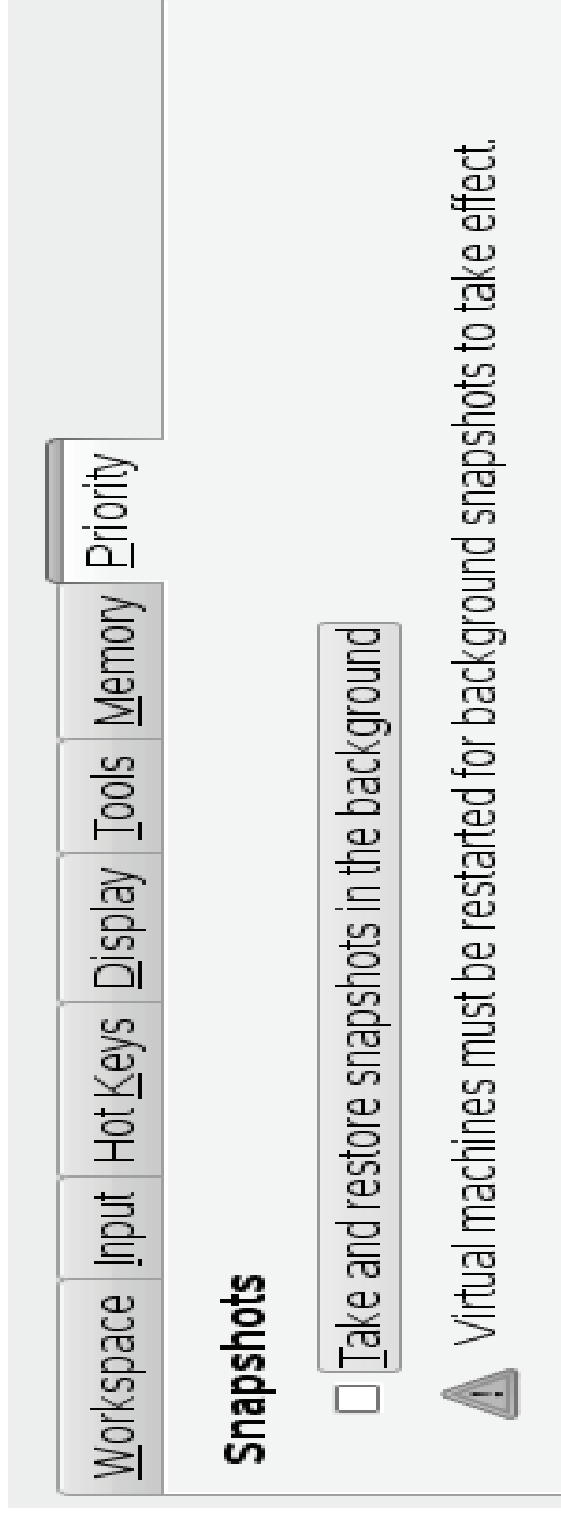
Swapping is worse in virtual than in real



More settings tips

Preferences are for all VMs

My all time least favorite “feature”



Causes the VM to take longer to start and is almost unusable while it starts

It's a technical marvel used in ESX and web caching

Advanced Networking

Advanced Networking

New Virtual Network editor in Linux

Easier than its Windows counterpart

Even makes NAT setup easy

DHCP is on by default

Consider having a set address and networking plan

Consider DHCP if sharing with others

NOTE – Resuming VMs sometimes fail to network

Multiple nets on the same address

`ethernet0.ignoreMACAddressConflict="true"`

This setting is a one year wonder

Up to 255 nets

Remember the file

Advanced Networking

No need to choose between network types

Have a few of each

Set up nat and dhcp on the fly

`/etc/vmware/vmnet1/nat/nat.conf`

```
# Linux NAT configuration file
[host]
# NAT gateway address
ip = 172.17.2.2
netmask = 255.255.255.0
# VMnet device if not specified on command line
device = /dev/vmnet1
[incomingtcp]
5930 = 172.17.2.34:80
```

Advanced Networking

Port forwarding

/etc/vmware/vmnet1/nat/nat.conf

```
# Linux NAT configuration file
```

```
[host]
```

```
# NAT gateway address
```

```
ip = 172.17.2.2
```

```
netmask = 255.255.255.0
```

```
device = /dev/vmnet1
```

```
activeFTP = 1
```

```
[incomingUDP]
```

```
[incomingtcp]
```

```
5930 = 172.17.2.34:80
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Advanced Networking

Port forwarding

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[incomingUDP]
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```
[incomingtcp]
```

```
5930 = 172.17.2.34:80
```

Advanced Networking

Port forwarding cont

```
ps ax | grep vmnet3    give something like (all one line)
21255 ?    Ss   0:00 /usr/bin/vmnet-natd -s 7 -d /var/run/vmnet-natd-3.pid -m /var/run/
vmnet-natd-3.mac -c /etc/vmware/vmnet3/nat/nat.conf
```

This shows you what command was run and which config files are read

```
Kill -9 21255
```

Kills the nat for vmnet3

Edit the conf file

```
IE -- add a port forward
```

Restart the nat with the same command from above (all one line)

```
/usr/bin/vmnet-natd -s 7 -d /var/run/vmnet-natd-3.pid -m /var/run/ vmnet-natd-3.mac -c
/etc/vmware/vmnet3/nat/nat.conf
```

User outside the nat can then access your 80 application by going to your desktop address:5930

```
http://dhodges1.provo.novell.com:5930    Goes to my VM at 172.17.2.34:80
```

Advanced Networking

NAT, VMs and snapshot for virus proof networking

Create a nice clean working VM

- Don't put any personal information at all

- Don't save passwords etc

- Don't use your name or common login

Shrink the disk

Suspend the VM

Take a snapshot called Mr Clean

Browse, download and act as irresponsibly as you like

When finished – restore the Mr Clean snapshot

- Remember that virus, while on the VM can infect neighbors only on the vmnet it's attached to

Under appreciated features

Under appreciated features

Shared folders

The easiest way to share data with the host

Use more than one

Floppies

Quick to create and easy to share

ISOs

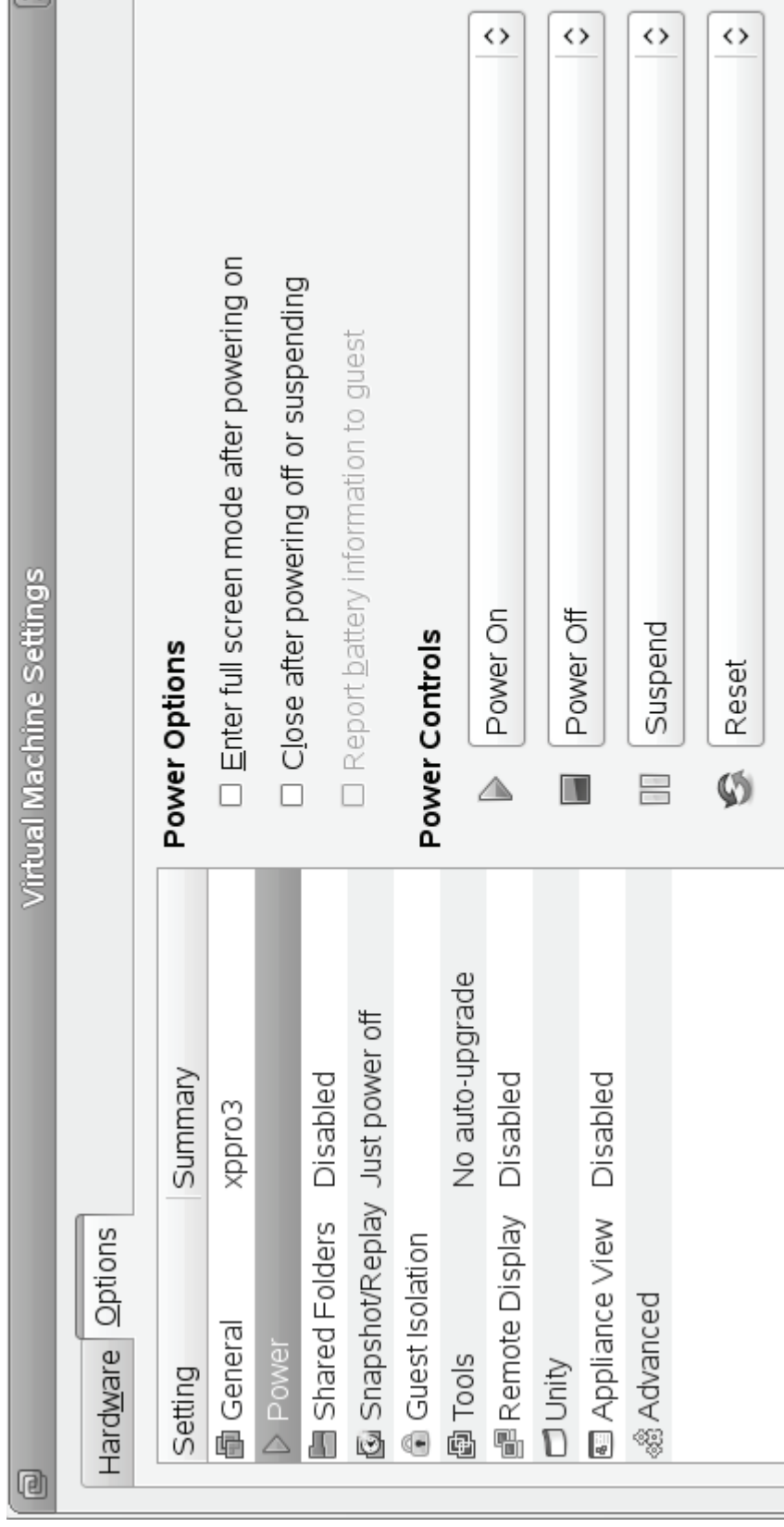
Like floppies only much larger and slower to build

Run Minimized

Most of the VM, Settings, Options tab

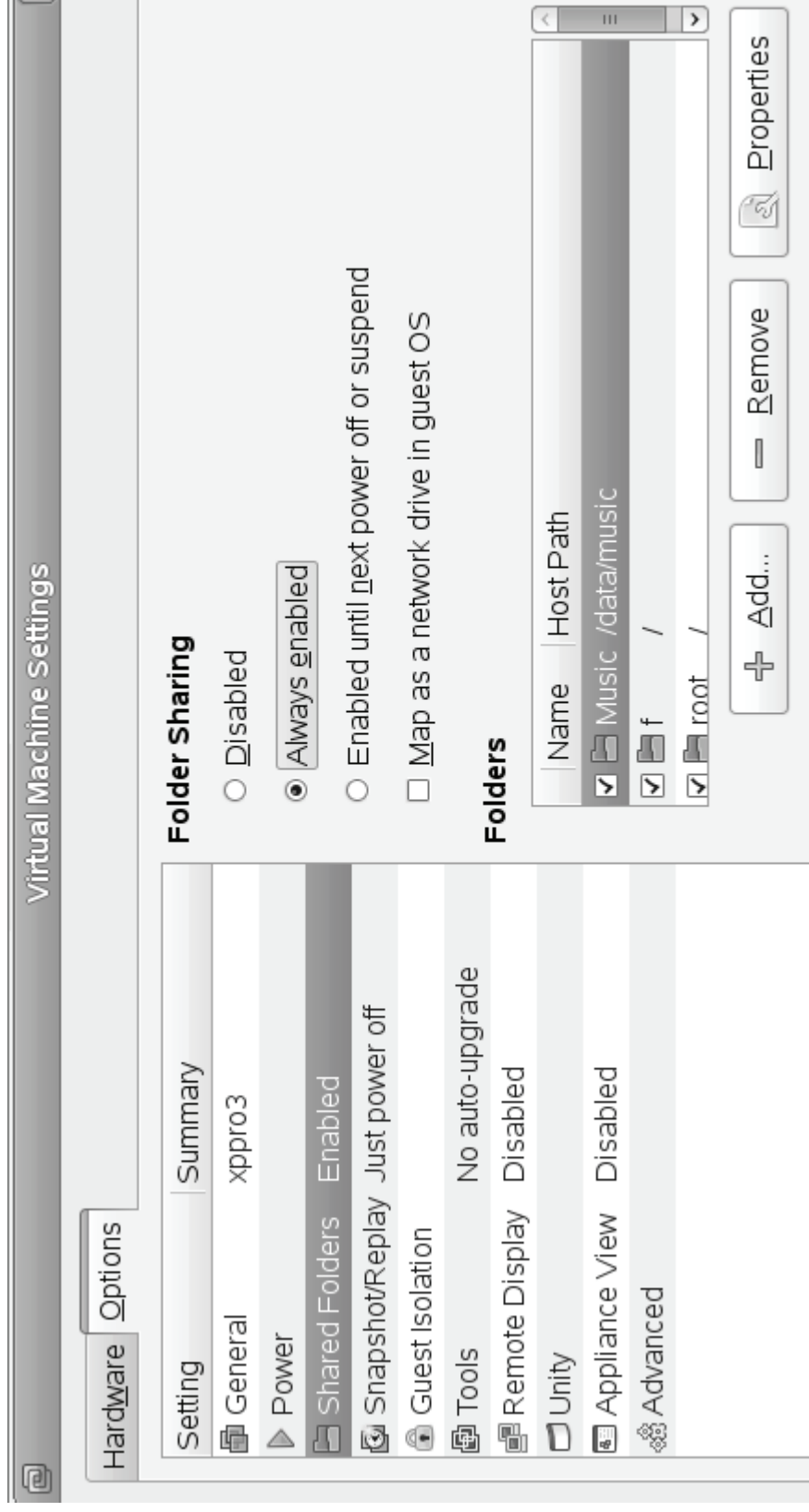
Under appreciated features

VM, Settings, Options page



Under appreciated features

VM, Settings, Options page

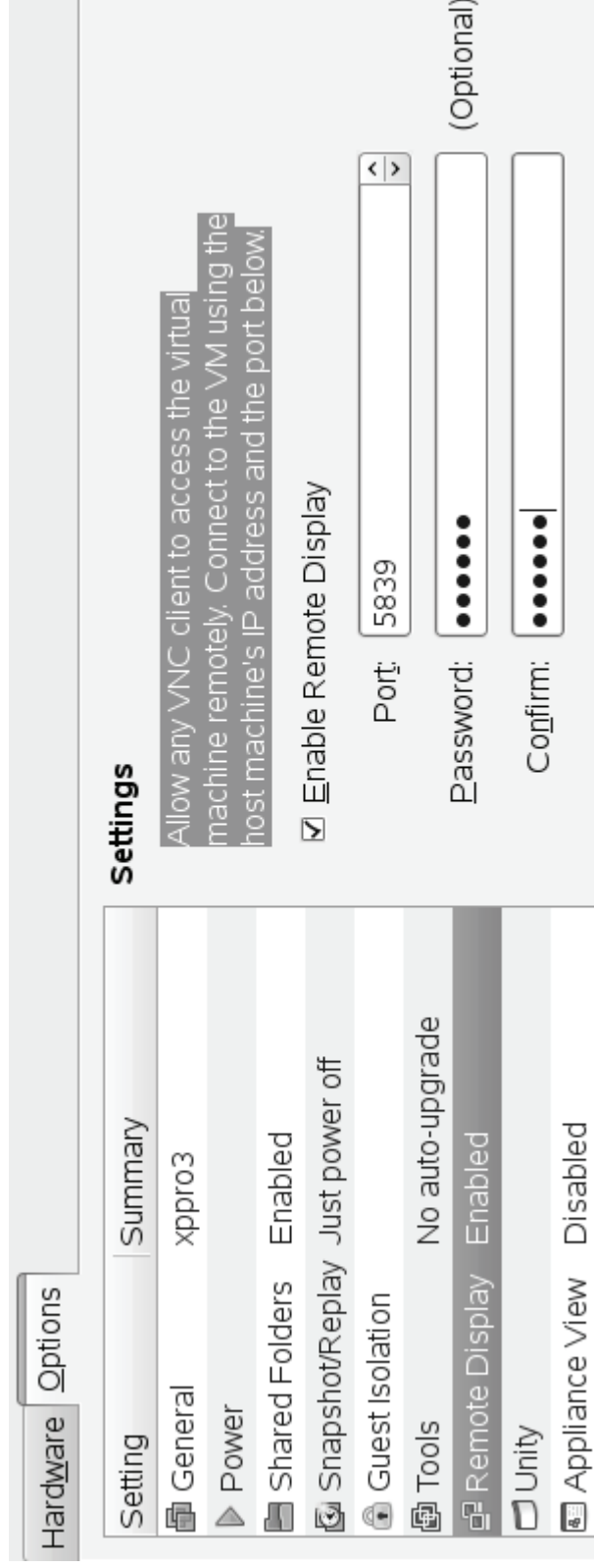


Under appreciated features

VM, Settings, Options page

This is port forwarding the easy way

You must be able to see the host on the port user



Under appreciated features

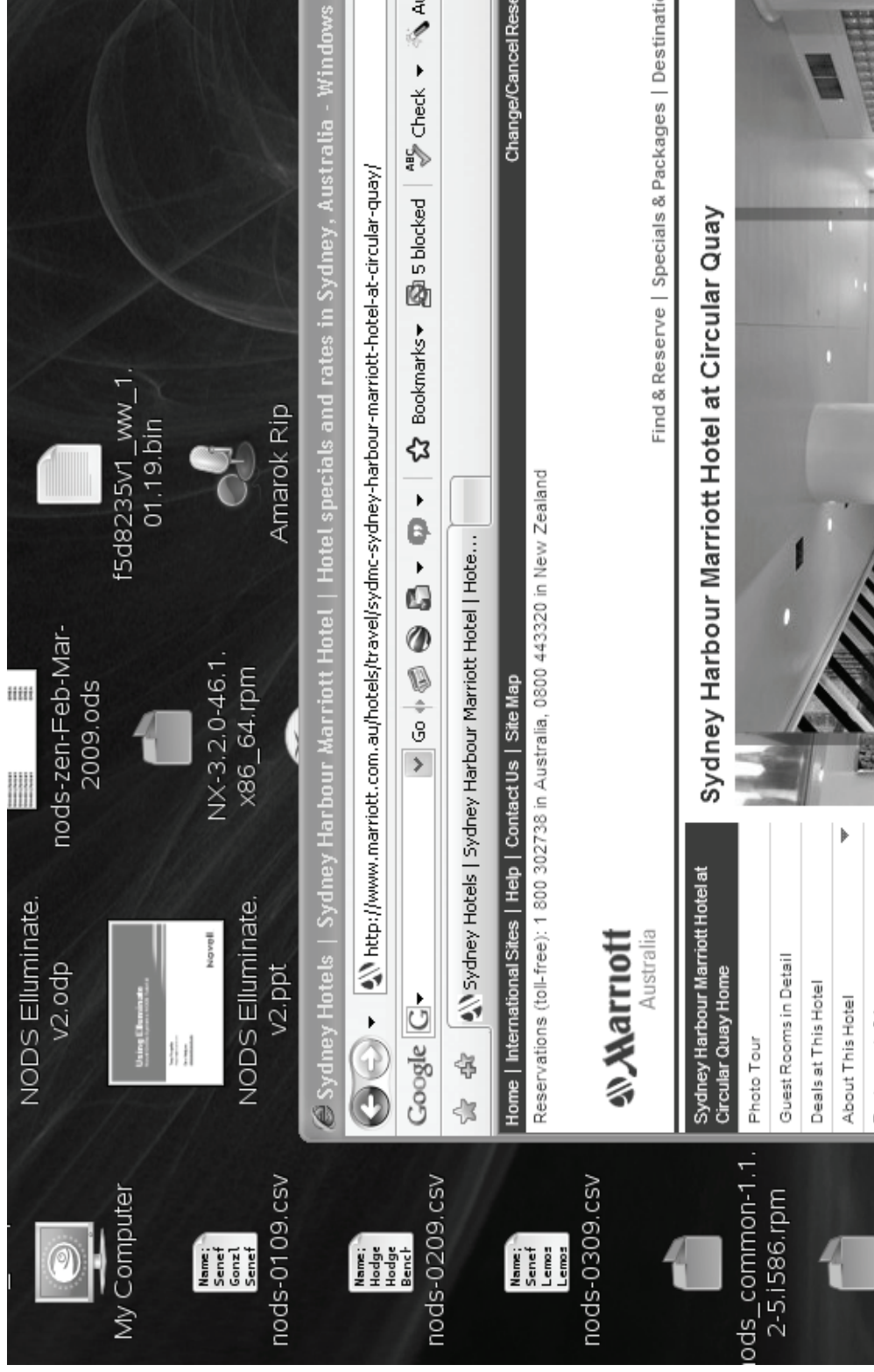
VM, Settings, Options page
Run IE like you were running Windows

Because you are



Under appreciated features

Unity sharing IE



Summary

VMware Workstation continues to evolve

RAM is requirement #1

Disk it requirement #2

Slow disk is crippling – get the good stuff

Go looking for new things to try

Port forwarding was no use to me 18 months ago and now it's all day every day

Many features are targetted at developers or will grow into Server type products.

If you install any VM OS twice this year, you goofed up

A dozen Windows VMs need a dozen Windows Licenses

Q&A