IDEAL UBUNTU SERVER CONFIGURATION FOR VMWARE HOST

HOST MACHINE

Operating System: **Ubuntu Server 8.0.1 (Hardy) - 64-bit**

Processor: **Intel E2220 2.2GHz**

RAM: **4GB**

Kernel: **2.6.24-19-server**

Important Points:

Sendmail	Sendmail **not** installed – caused random disk usage problems, so exim used for mail alerts from **mdadm** and **cron-apt**. (`sudo dpkg-reconfigure exim4-config`)
Cron-Apt	Cron-apt installed and configured to email **always**.
VMware Server	VMware Server 1.0.7 installed. When upgraded **xinetd** was broken for some reason so the remote console would not connect (forcibly refused connection) – `sudo apt-get install xinetd` fixed the problem.
X Server + Gnome	Installed the following packages for a minimal GUI: • Xorg • Gnome-core • Ubuntu-artwork • Firefox-2 • Gnome-system-monitor This means the machine will boot up into the console – and X can be started by running `startx` after login.
Cacti (Apache, MySQL, PHP)	Cacti is installed for monitoring all hosts on the network, along with network-weathermap.
Monitorix	Monitorix installed for detailed analysis of local processor usage etc.
Samba	Samba installed for sharing the VM directory, so new VMs can be copied easily to the server. Also shares the backup USB drive.
VM SCSI Drivers	Make sure the VMs are using the **lsilogic** SCSI driver, as it seems to consume less CPU and be a bit faster (see VMware configs below).
MemTrimRate	MemTrimRate saved a huge amount of iowait time on the host, causing some load issues (pdflush writing to the disk almost constantly), so should be set to 0 as below.

VIRTUAL MACHINES

Name	RAM	Roles
Zeus	1GB	DC, DNS, DHCP, File Server
Apollo	1.5GB	Exchange
Www	512MB	Web Server

/ETC/INIT.D/RC.LOCAL

This file is run once the machine has booted – it takes care of some issues that were encountered with Ubuntu Server and VMware (dedicated VM NIC not coming up at boot, external USB hard drive not mounting at boot, and VMs not starting properly at boot time):

```
#Hacky fix for eth1 - no IP so doesn't come up at boot on it's own
echo "Bringing up dedicated DMZ NIC..."
ifconfig eth1 up

#Remount the backup drive, as it's a bit shit at that
echo "Remount external USB drive..."
umount /mnt/Backup
mount /mnt/Backup

#Start the VMs
echo "Initiating Virtual Machine startup process..."
/etc/vmware/start_vms > /etc/vmware/startup_log.log 2>&1 &
```

/ETC/SYSCTL.CONF

vm.swappiness	0
vm.overcommit_memory	1
vm.dirty_background_ratio	5
vm.dirty_ratio	80
vm.dirty_expire_centisecs	2000
dev.rtc.max-user-freq	1024

These settings, along with some of those in the table below, were adapted from a brilliant post on the VMware community forums, at this URL: http://communities.vmware.com/thread/146002

/ETC/VMWARE/CONFIG

MemTrimRate	“0”
sched.mem.pshare.enable	“false”
mainMem.useNamedFile	“false”
prefvmx.useRecommendedLockedMemSize	“true”
prefvmx.minVmMemPct	“100”
defaultVMPath	“/mnt/VMs”
priority.grabbed	“normal”
priority.ungrabbed	“normal”

EACH VMWARE .VMX FILE

MemAllowAutoScaleDown	“FALSE”
MemTrimRate	“0”
scsi0.virtualDev	“lsilogic”

/ETC/FSTAB

Adding **noatime** to the mount options of each drive used by VMware (and indeed the system itself) helps with performance as the server doesn't have to record the last access time (atime) of each file when it is accessed or modified. For example:

```
/dev/md1      /mnt/Data     xfs    defaults,noatime     0      0
```

FILE SYSTEMS

Using the XFS file system for the Virtual Machine drives helps, as it is more efficient than ext3. Increasing the block size was recommended, but I could not get the file system to mount with a larger block size, so I left it at the default.