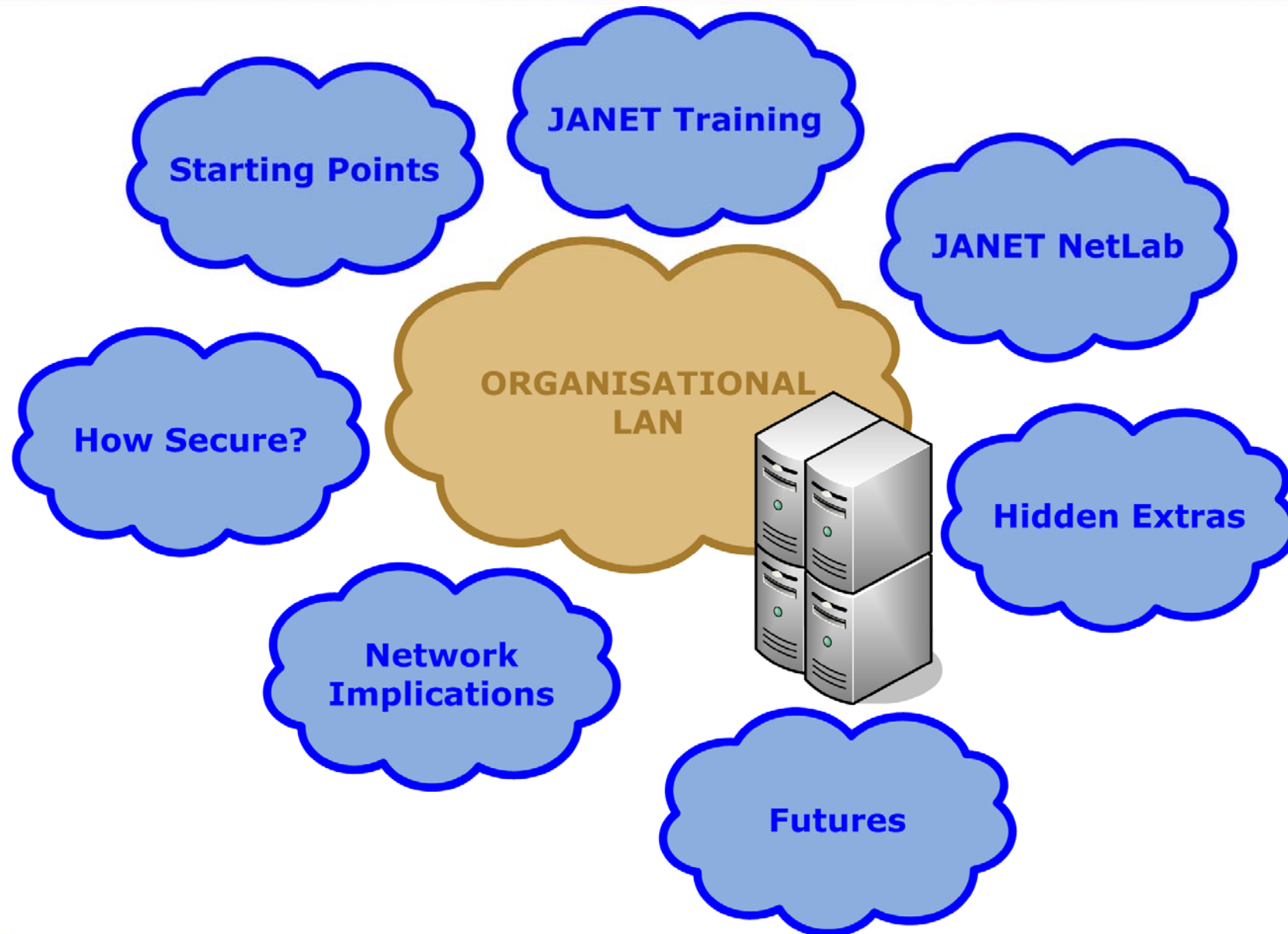




# Virtualisation: A Networking and Security Conundrum

**Matthew Cook**  
**Network & Security Manager**  
**Loughborough University**

# Virtualisation: A Networking and Security Conundrum

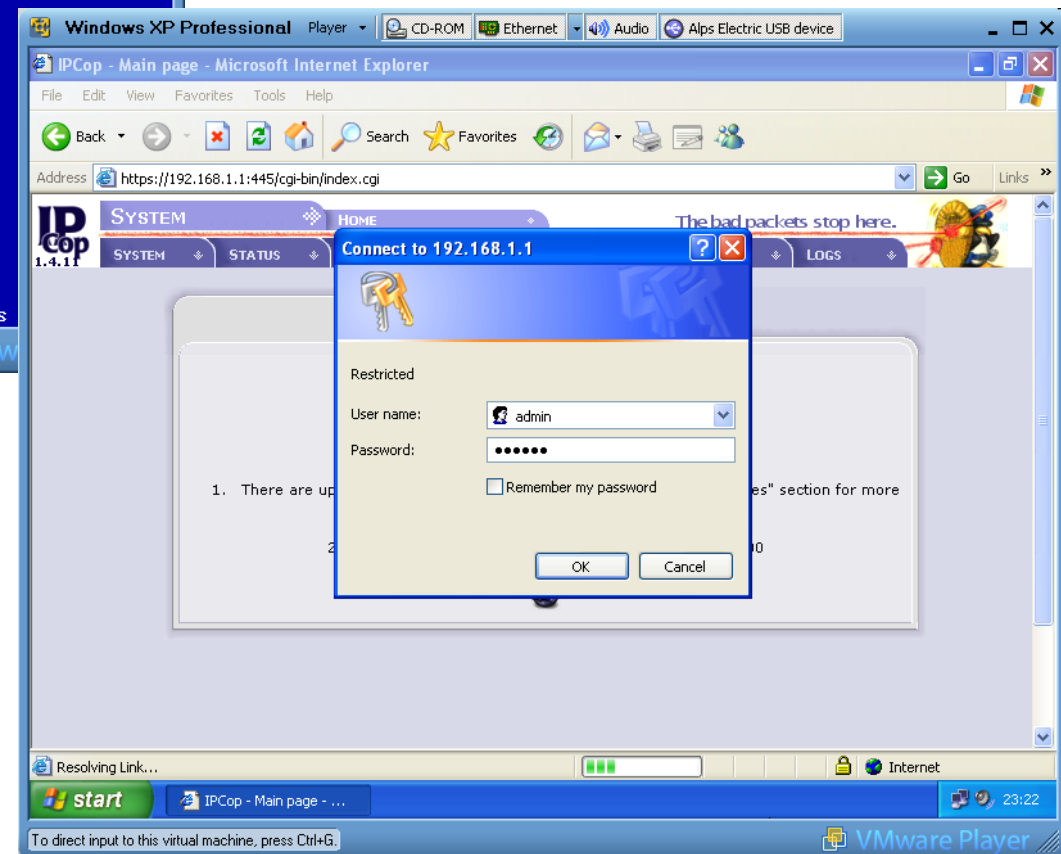
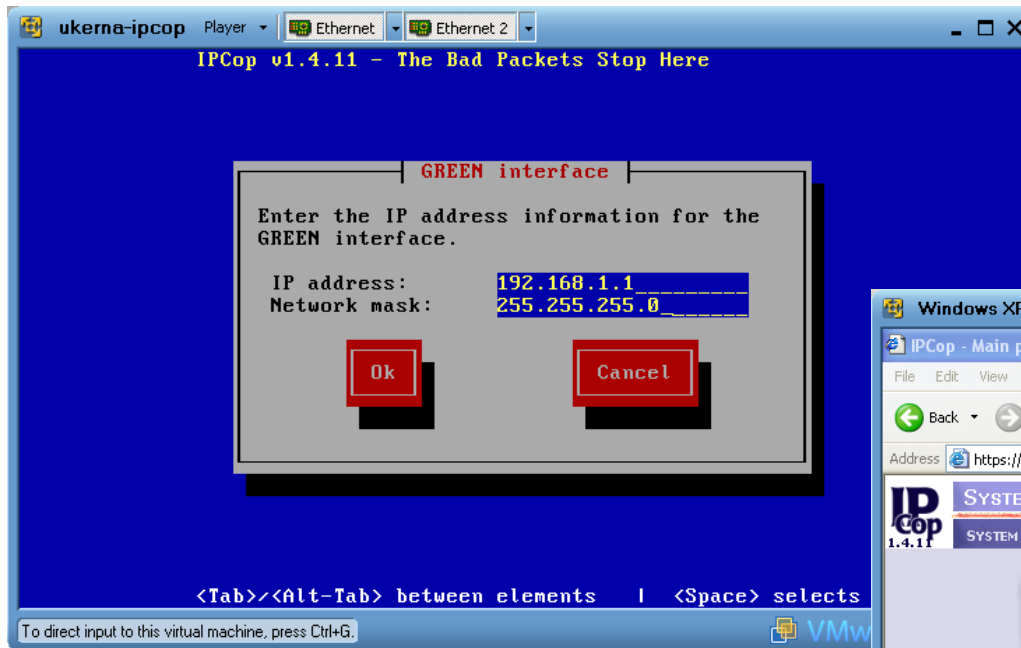


# Starting Points

- This is not a virtualisation implementation presentation...
- However this is set of ideas surrounding the network implications of your organisation implementing virtualisation technologies.
- Loughborough are currently evaluating the benefits of varied technologies: VMware, Microsoft Hyper-V, Xen and Solaris Zones.
- Not talking about Desktop, Application or Storage Virtualisation.
- If it is not on your agenda now, it will be!



# JANET Training

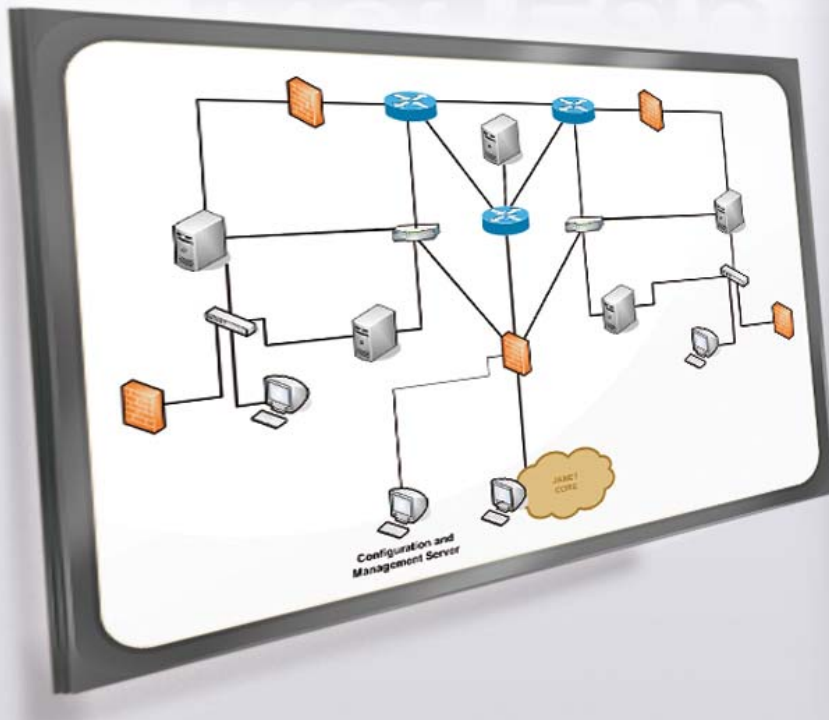


Practical training activities  
using VMware Player

# JANET NetLab



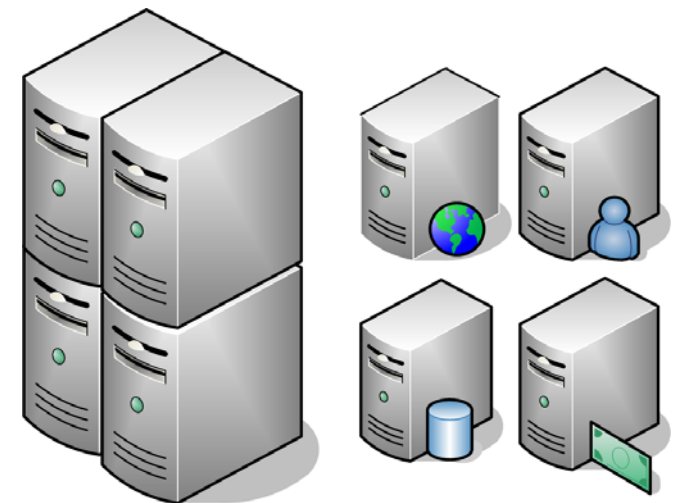
## Net Lab



- Core of JANET
- State of the art
- Industry standard
- Course support
- VMware ESX
- VPN connection
- Firewalls
- IPv6
- Multicast

# How Secure?

- Can secure Virtual Machines exist on the same host?
  - Do you want to run your Web and SQL server on the same physical computer, even if virtualised?
  - Breaking out of the VM is possible
  
- Is automatic provisioning a good idea?
  
- Where is the traditional DMZ?
  
- Shared VM Services
  - Anti Virus
  - HIDS/HIPS



## Network Implications

- Is the virtual network secure?
  - Does your IDS/IPS have visibility of the virtual switch?
  - Network probe guest VM?
  - Increased frequency of SSL based attacks
  
- Expectation that the network can deliver:
  - Speed requirements, does it make sense to virtualise high bandwidth applications?
  - Same IP Everywhere (VMotion)
  - Automated VLAN changes

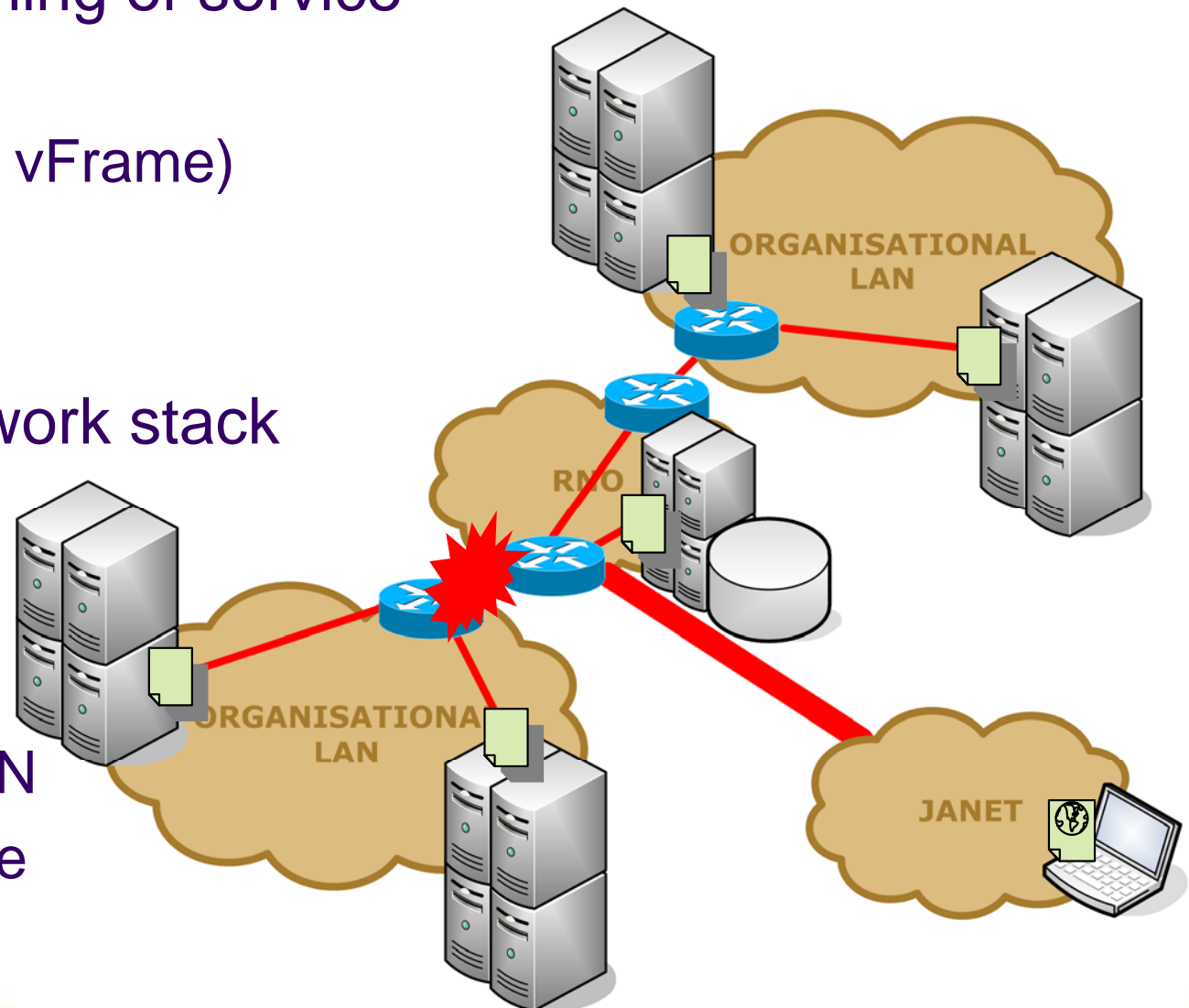


## Hidden Extras

- Can you get enough bandwidth from the server?
  - PCI-X 1.0 - 133 Mhz @ 8.53Gb/sec
  - PCI-X 2.0 - 266 Mhz @ 17.2Gb/sec
  - PCI-X 2.0 - 533 Mhz @ 34.4Gb/sec
  - However: beware slow cards, slow the whole bus
  - Take advantage of multiple buses
  - Don't let the network take the blame!
- Fixing shortcomings in software
  - USB over IP
  - Digi's AnywhereUSB
  - [http://www.vmware.com/pdf/esx\\_anywhereusb2.pdf](http://www.vmware.com/pdf/esx_anywhereusb2.pdf)

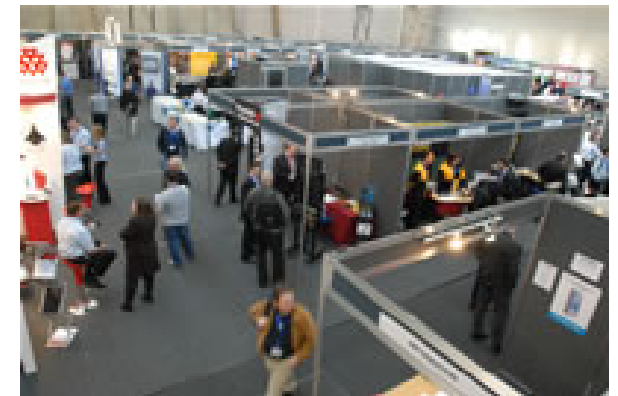
# Futures

- Automated provisioning of service
  - Virtual Machine
  - Networking (Cisco vFrame)
  - Storage
  
- Complete IPv6 Network stack
  
- Pervasive Data Centres
  - Organisational SAN
  - Shared VM Service



## Birds of a Feather Session

- 17:45 – 18:30  
K3.14  
Practical Implications of Virtualisation
- What has your site implemented?
- Did you have to change your network infrastructure?
- Worried about IT Security?
- Any advice to provide to the community?
- There is time before the wine reception and exhibition...



## JANET CSIRT Conference October 2008

- JANET CSIRT Conference booked for October 2008
- Sir Denis Rooke Building, Holywell Park, Loughborough University
- Thursday 23<sup>rd</sup> October 08
- Full day programme
- Further Details:  
<http://www.ja.net/services/csirt/>





**Questions?**

**Matthew Cook**  
**<http://escarpment.net/>**