



Use of Virtualization in Emergency Preparedness

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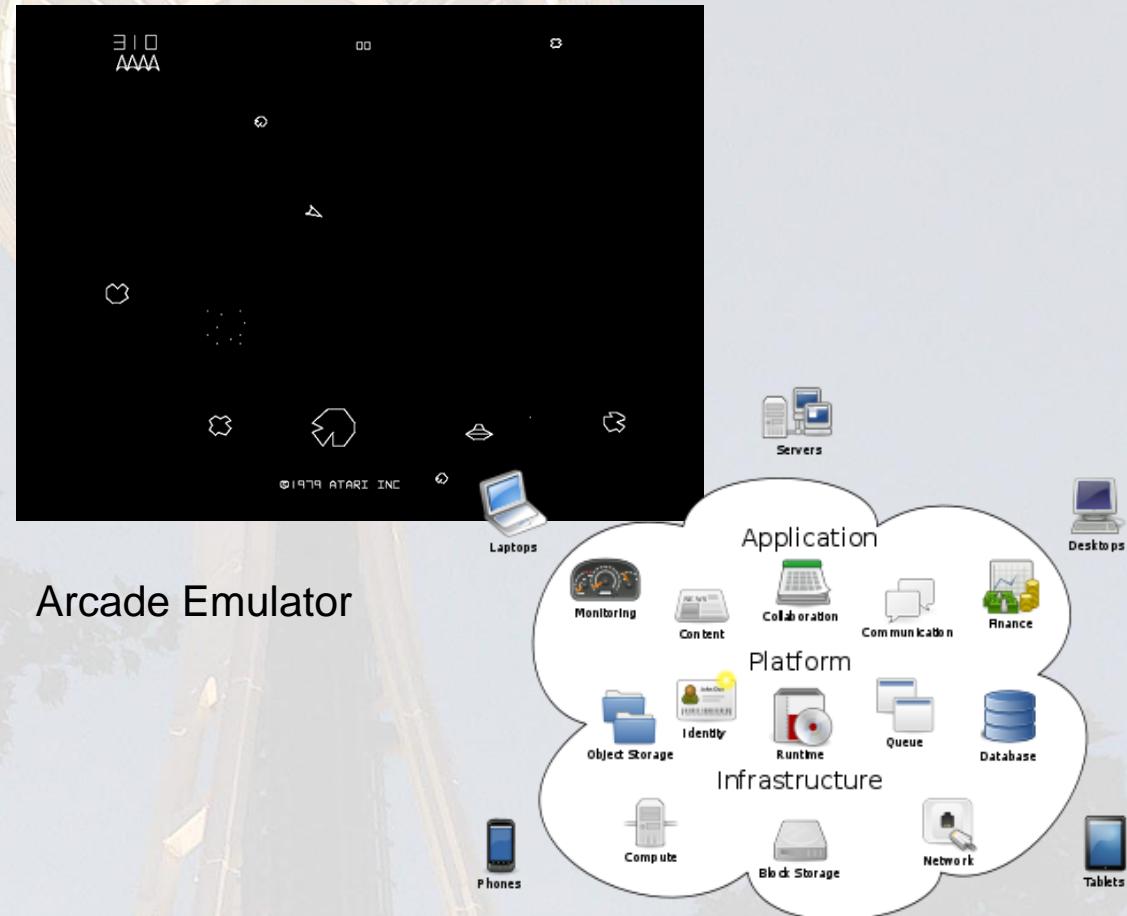
TOPICS

- What is a virtual computer?
- Why use a virtual computer?
- How easy is it to implement?

Virtualization is everywhere



Java Virtual Machine

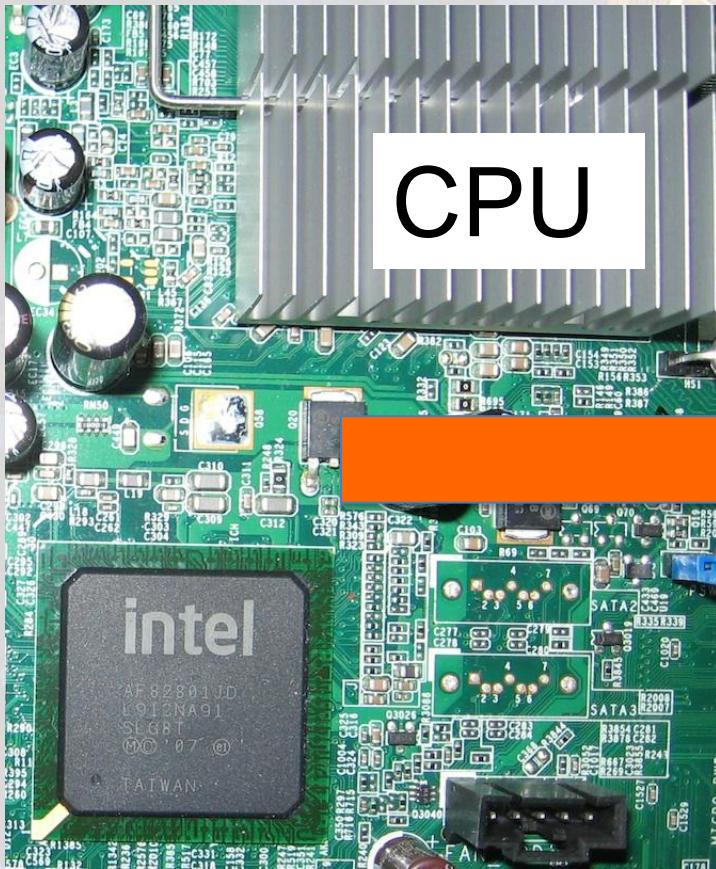


What is a virtual computer?

“A virtual computer is a logical representation of a computer in software.”

- IBM “Virtualization In Education”, 2007

What is a virtual computer?



Dell Motherboard

```
i386-dis.c
Last Saved: 2/17/12 12:45:39 PM
File Path : ~/Downloads/qemu-1.0.1/i386-dis.c
(no symbol selected)

enum address_mode
{
    mode_16bit,
    mode_32bit,
    mode_64bit
};

static enum address_mode address_mode;

/* Flags for the prefixes for the current instruction. See below. */
static int prefixes;

/* Mark parts used in the REX prefix. When we are testing for
empty prefix (for 8bit register REX extension), just mask it
out. Otherwise test for REX bit is excuse for existence of
only in case value is nonzero. */
#define USED_REX(value)
{
    if (value)
    {
        if ((rex & value))
            rex_used |= (value) | REX_OPCODE;
    }
    else
        rex_used |= REX_OPCODE;
}
```

QEMU CPU Code

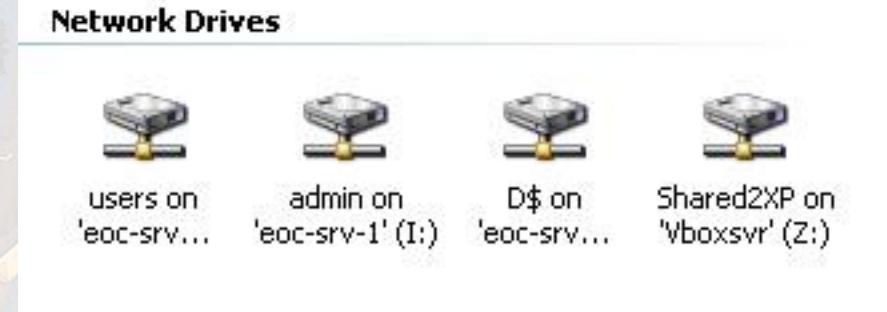
Levels of Virtualization - Desktop



GoToMeeting by Citrix

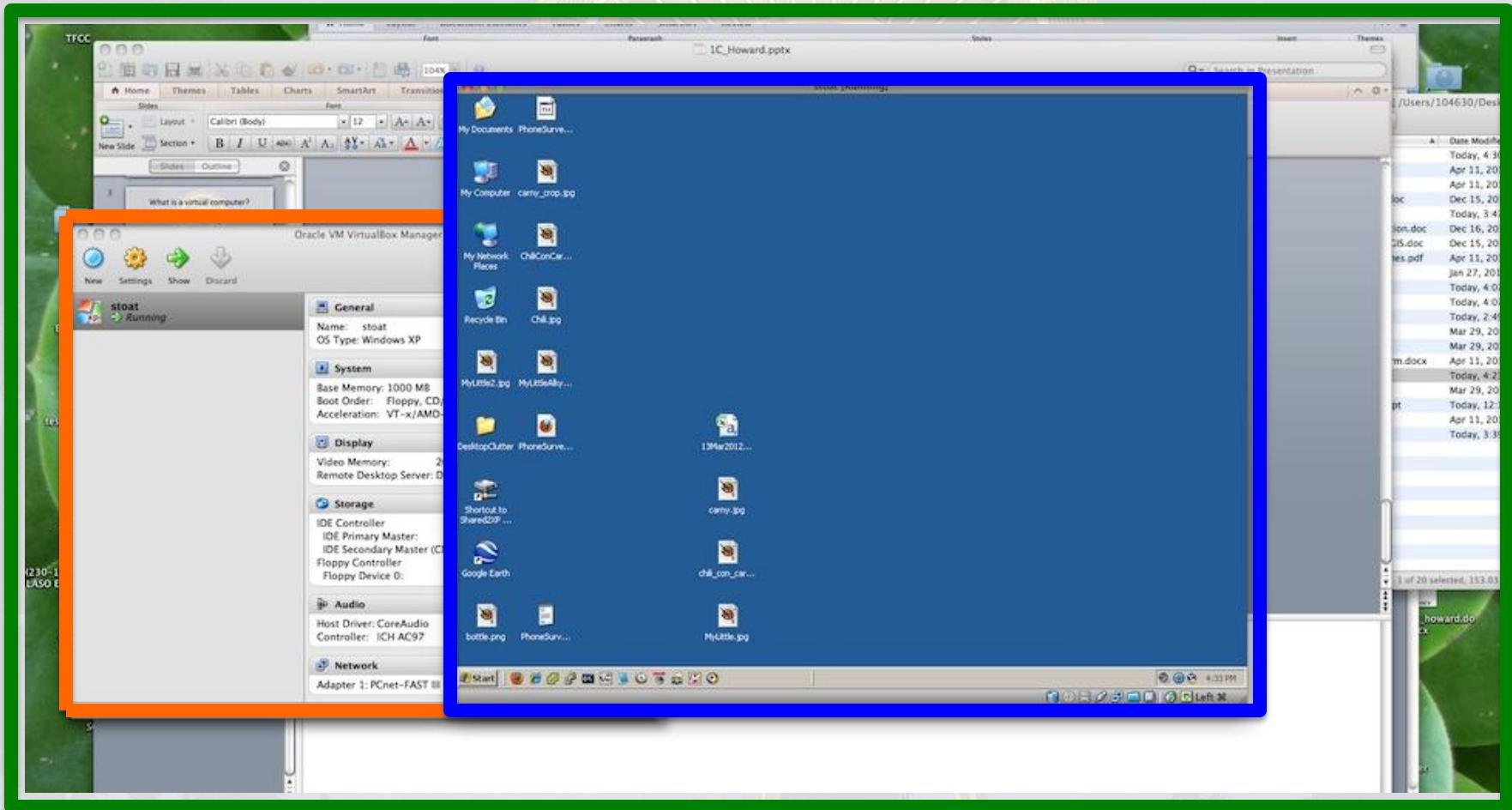


Virtual Network Computing (VNC)



Network drive mapping on Windows

Levels of Virtualization – Virtual Host

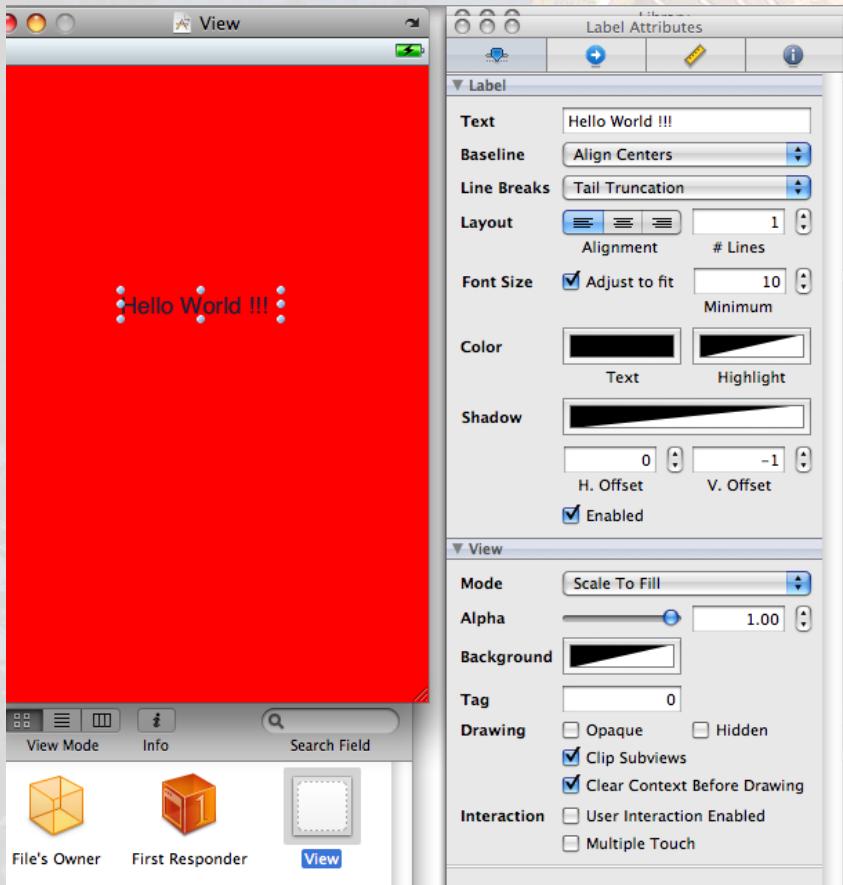


Host=Mac

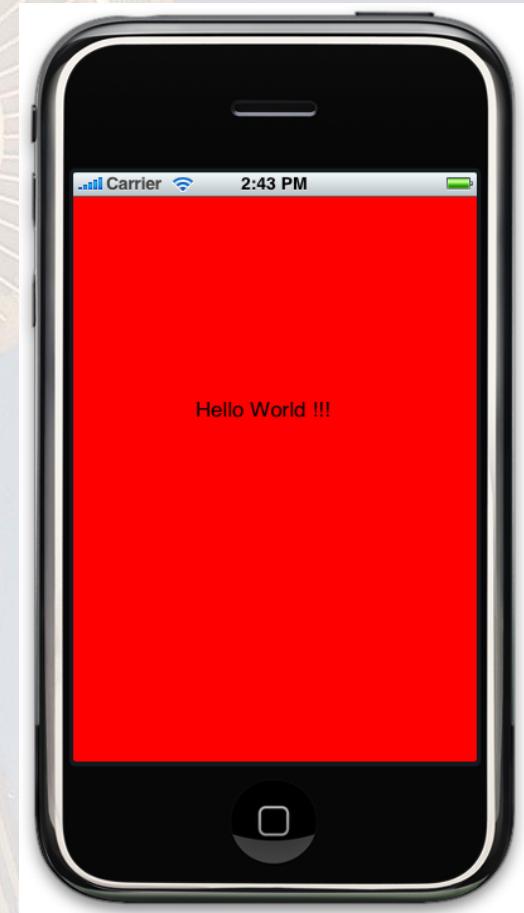
Virtual Machine Monitor (VMM)=VirtualBox

Client=Windows

Levels of Virtualization - Emulator



Apple XCode Development

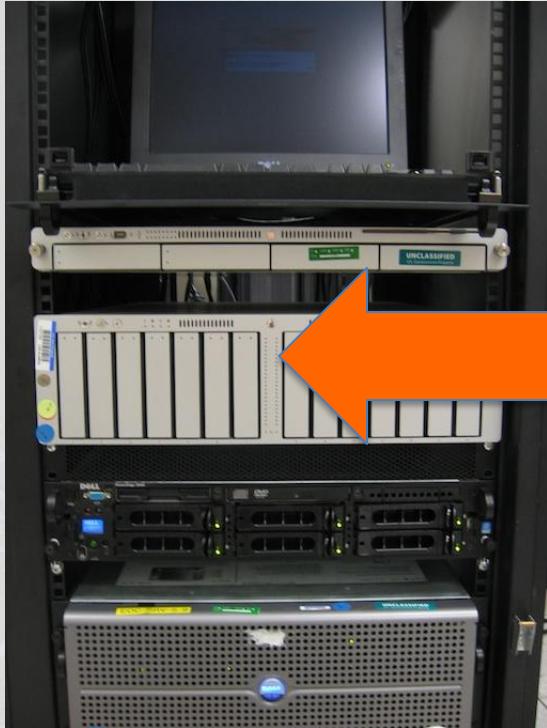


Emulated iPhone

Why use a virtual computer?

- Save money
- Save time
- Keep it simple

Preparedness requires *redundancy*

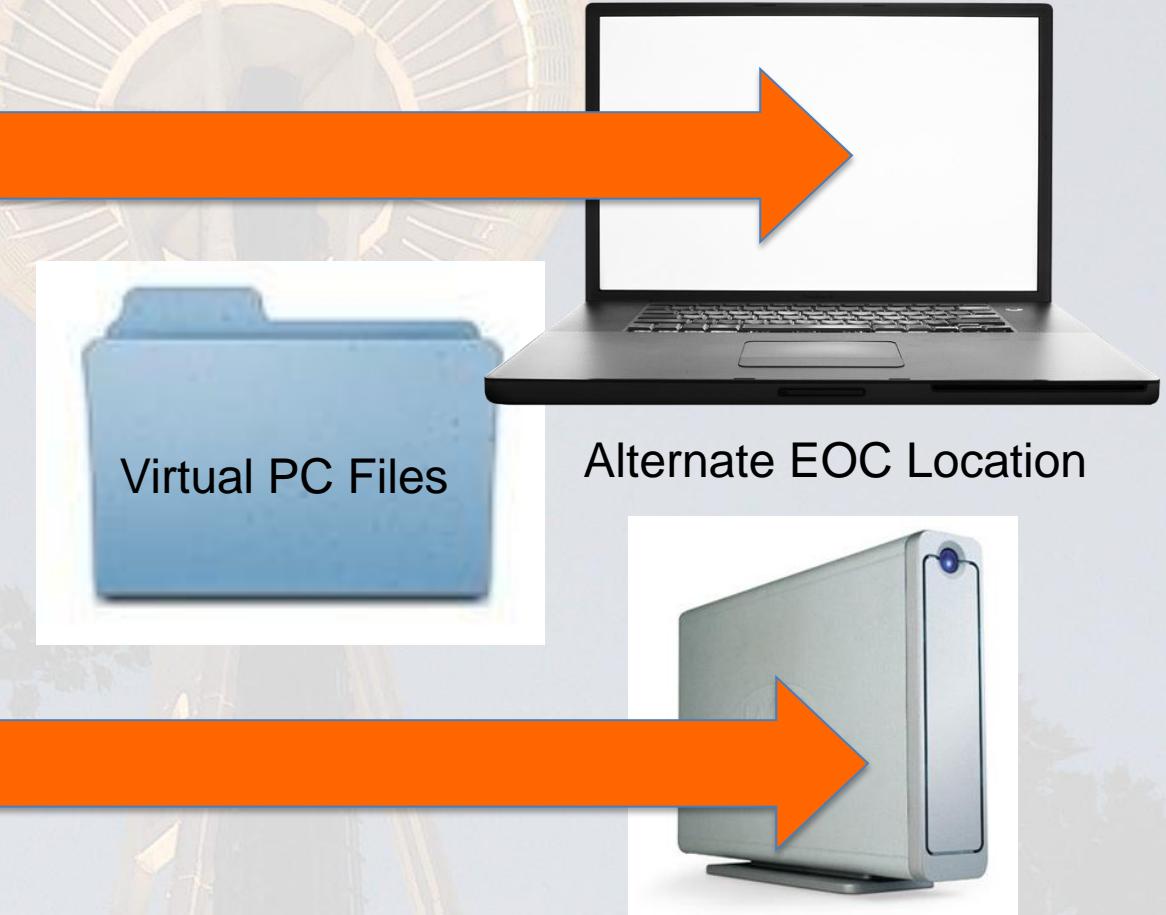


Twice the servers = twice the money

Virtual Redundancy Saves Money



Primary EOC Location



Virtual PC Files

Alternate EOC Location



Grab-N-Go Backup

Virtual Redundancy Saves Time



Copy Virtual Computer Via Network



Copy Virtual Computer Via External Storage

Backup and synchronization are the same operation.

Virtual Redundancy Is Simple



Backup



Synchronization

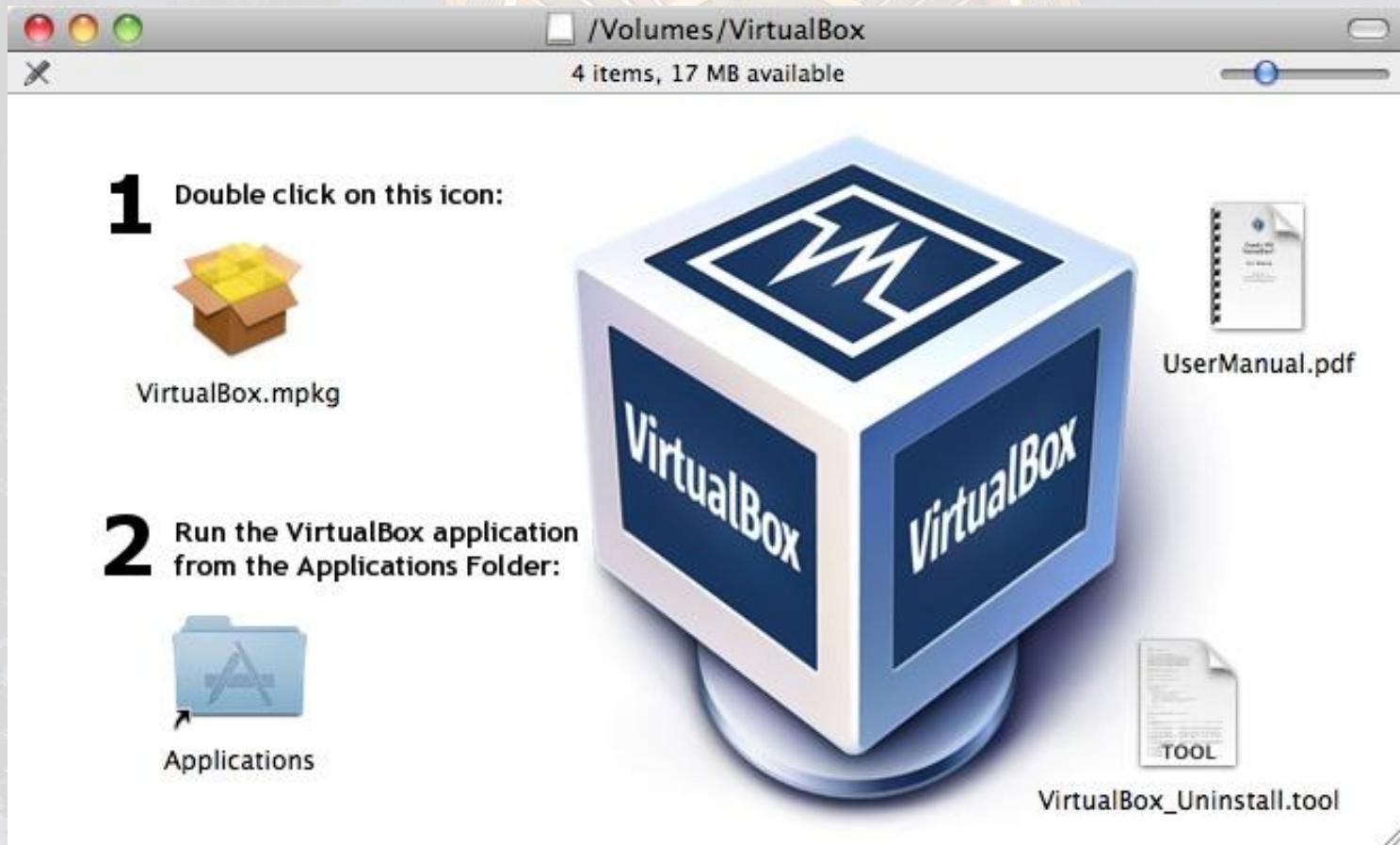
It's Cheap, Fast & Simple

- Commodity drives and laptops
- Copy computer images over the net at night and/or mirror images to external drives and take them with you
- It's the same computer – no configuration time and no learning curve

How easy is it to implement?

- Install the host program
- Configure the client hardware – drive size, RAM and network
- Install the guest operating system and programs or copy an existing client

Install - Mac



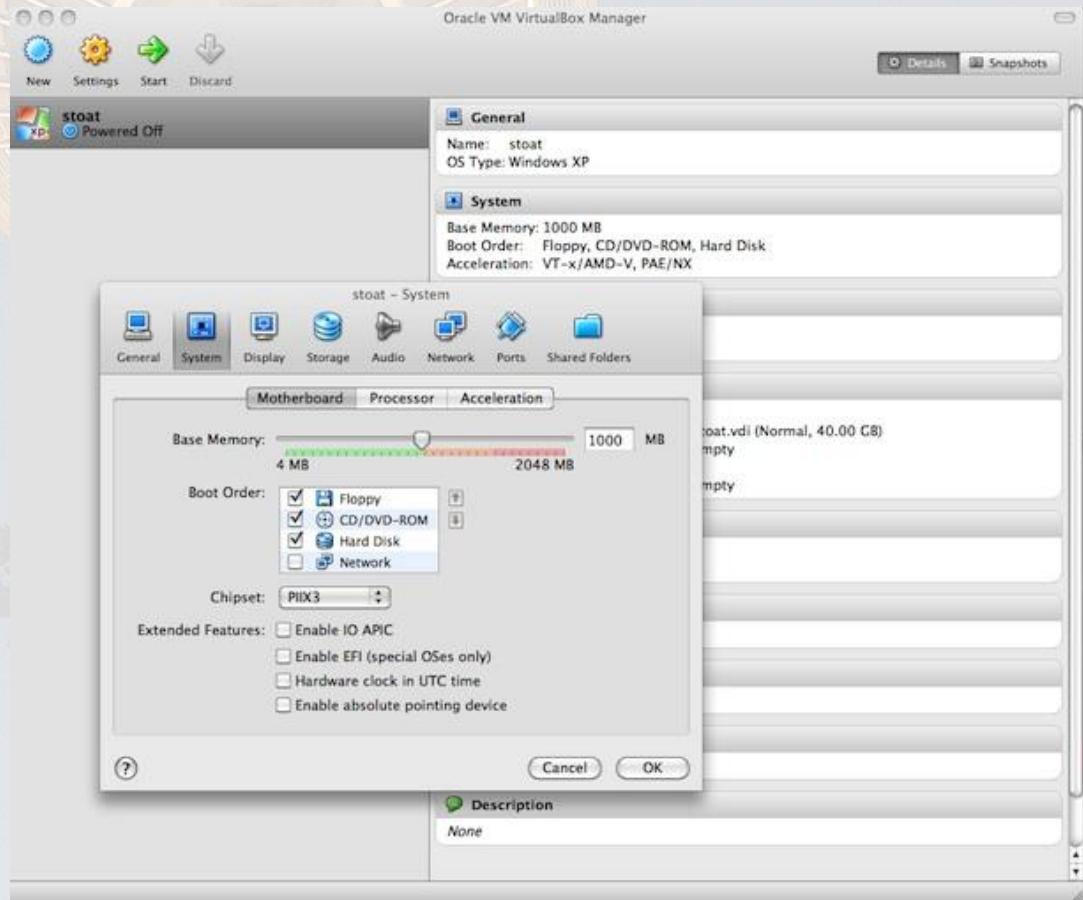
Install - Windows

- Run the EXE
- Click “Next” in the Wizard
- Run it from the Start menu



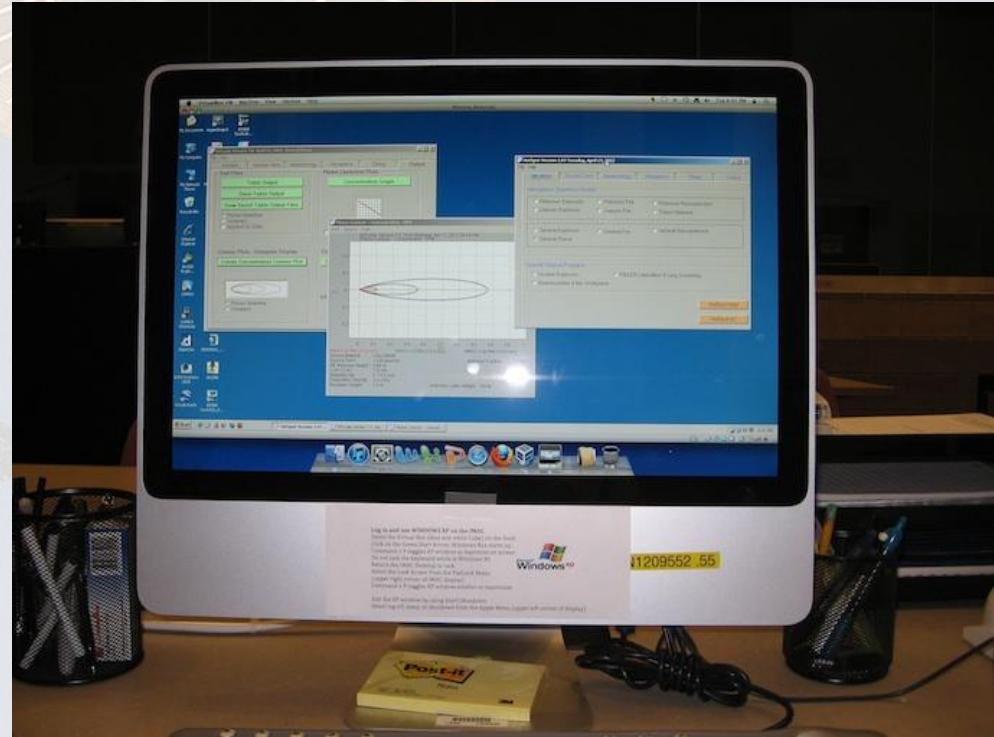
Configure

- Disk space
- RAM
- Network
- Install OS



Run

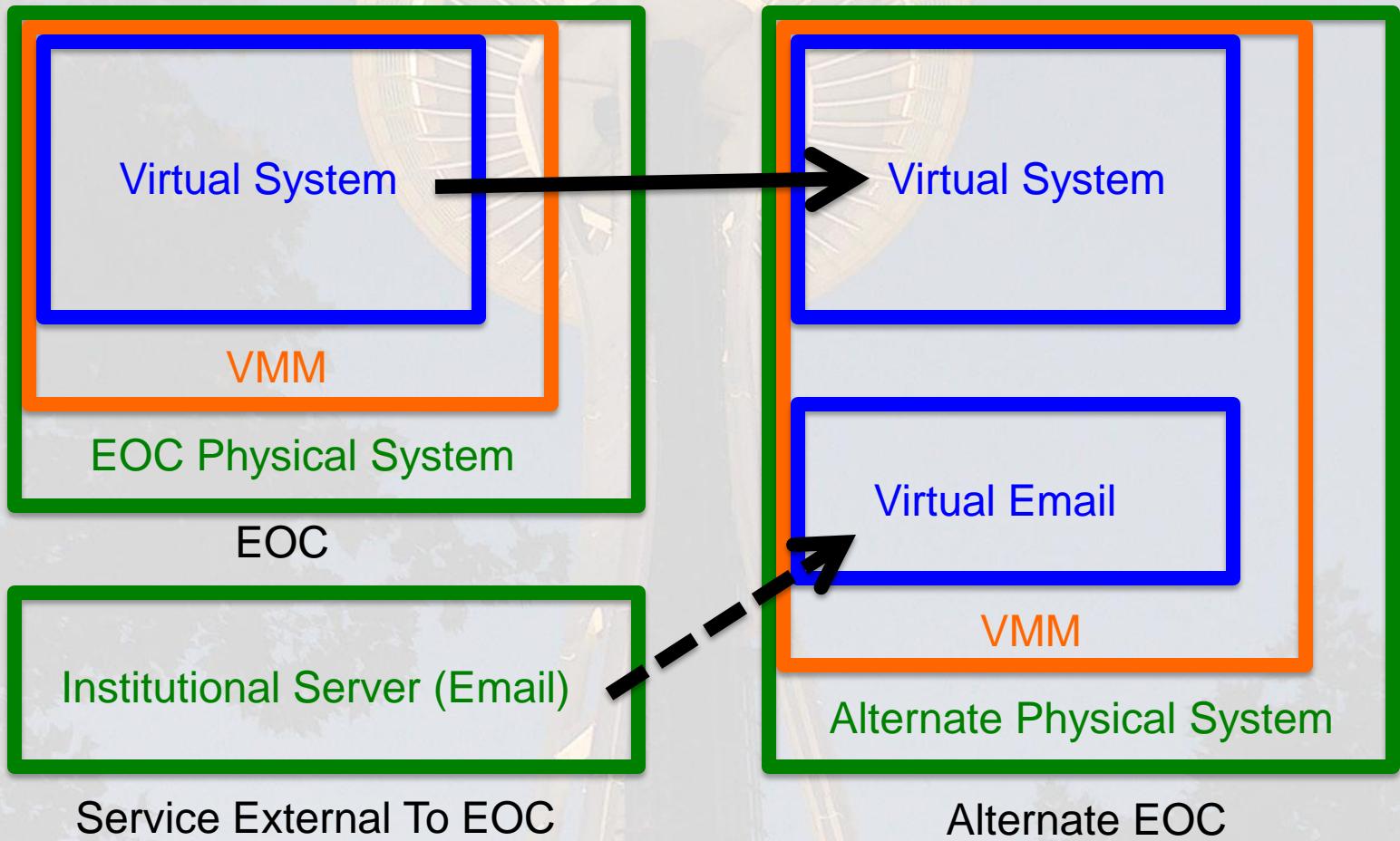
- Network completely sandboxed
- Network only to host
- Host acts as firewall/router
- Client visible

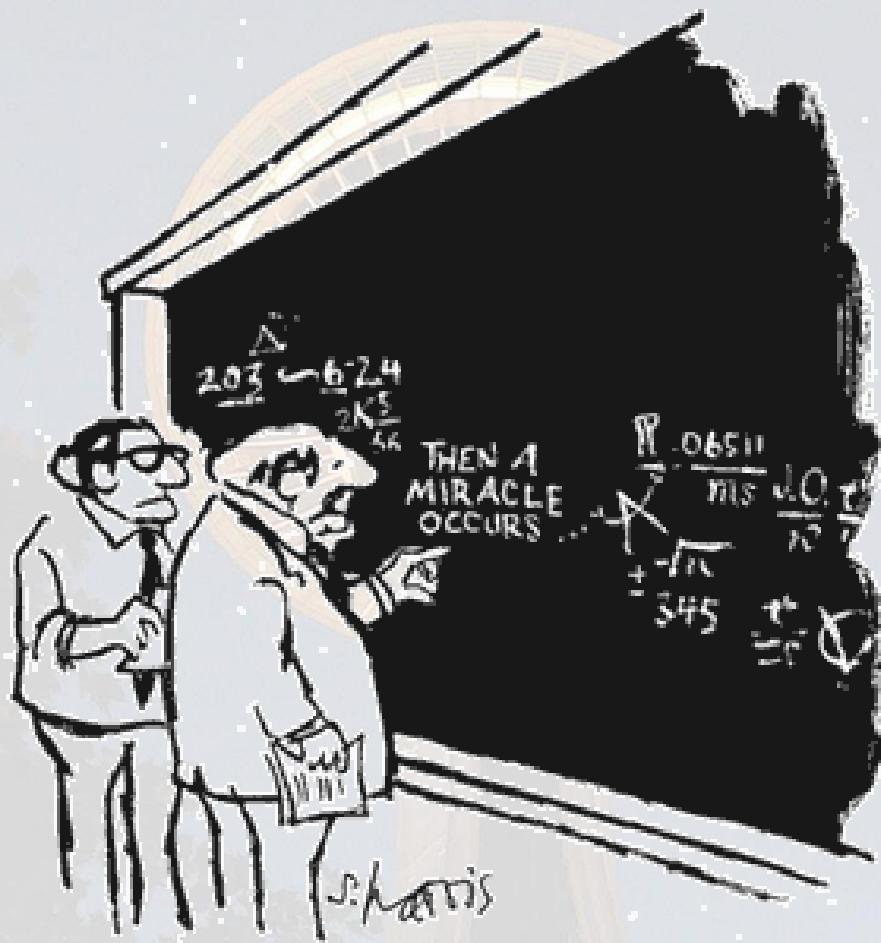


Looking Forward

- All EOC servers virtualized.
- Critical consequence assessment systems virtualized.
- Ready-to-run virtual servers for institutional services like email.

Looking Forward (continued)





"I THINK YOU SHOULD BE MORE EXPLICIT HERE IN STEP TWO."

Copyright 2006 by Sidney Harris

Resources

- VirtualBox - <https://www.virtualbox.org/>
- Vmware - <http://www.vmware.com/>
- Parallels - <http://www.parallels.com/>
- QEMU - http://wiki.qemu.org/Main_Page
- Q (QEMU for Mac) - <http://www.kju-app.org/>

Summary

- A virtual computer is a logical representation of a computer in software
- Cheap, Fast, Simple
- Easy to install and configure



QUESTIONS?