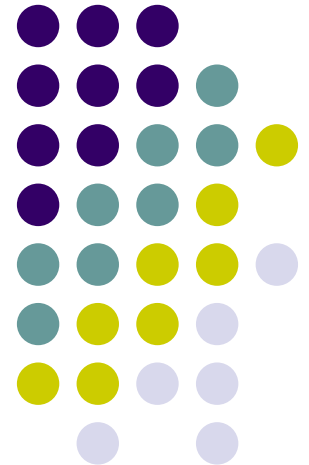


Uses of Virtualization

Innovating in IT

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What We Plan To Do

- Examine ways in which virtualization helps IT today. Some well-known, others less so.
- Look at some cutting-edge scenarios:
 - Some in actual deployment
 - Others on the cusp of deployment

What is certain: Virtualization in IT is here to stay because its benefits are compelling.

Safe S*x on the Web



- All access to websites is potentially dangerous due to malware. To wit:

“Microsoft acknowledged this week a new weakness that allows hacked Web sites to infect PCs merely by displaying specific images in the Internet Explorer browser. The Redmond company hasn't promised to issue a patch until the company's next regular Patch Tuesday, although it's possible that a patch might come out earlier.” –Windows Secrets Newsletter

- VMs are only files on host system. So, if corrupted, can be deleted and re-created



More Safe S*x on the Web

- If cookies/passwords are needed, keep them in the original VM image in library. Can present other risks: Use encryption on the image.
- To be safe: most Web activities that are not commercial transactions should occur in a VM
- Including: surfing to dangerous sites, research, downloads, automated scripts, validation, security testing, etc.

Software Evaluation



- Fairly simple to do on one machine
- Enables you to test features and compatibility
- Cannot test actual performance, but can come close. Can simulate scalability easily.
- Cannot test all multiprocessor configurations: cores do not show up individually, nor do Hyper-Threading pipelines on some hypervisors (ESX 2 one of the first to support these features.)
- Cannot test high-speed graphics (Vista Aero still not supported)
- 64-bit support only recently added

Need for Capture in Eval / QA



- Capture screens or portions thereof and provide annotations (consider SnagIt from www.SnagIt.com)
- Capture snapshots of deployed VM configuration for later replay. Due to conflicts of IP addresses and MAC addresses, special software is needed. (VMware/Akimbi, Surgient)



More Software Evaluation

- Multiple VM configurations are trickier
- Decide freshness of VMs for servers on each eval. Do you need a baseline that is common to all evaluations?
- Think about: licensing requirements, MAC-specific software, and IP-address sensitivity. Lab automation software can help here.

Software Testing



- Not the same as software evaluation: fewer unknowns; testing generally done for portability validation; frequently safe to reuse server VMs
- Can be used for QA testing as well. Needs mostly dictated by existing QA policies.
- Capture capabilities crucial in QA

Software Testing of OS's



- VMs useful for testing upcoming operating systems
- This is the last generation of OS's that won't design for virtualization – paravirtualization
- To run Microsoft Vista on VMware, see: www.joelonsoftware.com/items/2006/09/08b.html

Tech Support



- Support engineers can pull up client OS/software from library in real time, so instructions match customer system
- Support engineers can re-create client's more complex environments in real-time. Ideal for configuration issues, less good for tracking down unique-to-customer bugs.
- Can save environments for follow-up calls

Server Consolidation



- Best for consolidating low-usage systems onto one physical server
- Also ideal for consolidating systems using old or outdated operating systems
- Requires care, introduces new risks. Single point of failure more costly, now.
- Does not solve systems management issues. Only consolidates.

Leading-Edge Use Cases...



- Previous use cases among the more typical, even if still not found commonly.
- Remaining use cases are less common, but compelling. Will become more common during the next few years.

Training



- Virtualization removes configuration issues from trainers and students
- Typical scenario: prepare 20 VM instances, each with own IP address for a class. Students use browser interface to access VMs. Result: everyone has same settings right away. (Surgient VTMS and Hatsize TrueLab)
- Can be used for study/practice machines

Software Development



- For offshore development: developers use a hosted VM with all resources on local systems, rather than at remote sites. This helps protect IP.
- Also useful for developers working on OS's or configurations not supported by IT. Provides flexibility without having to make exceptions.

Demos



- Fresh VM for every demo provides repeatable experience and removes unexpected hiccups
- Load fresh VMs on laptop; or host demo VM at company and have prospective clients or customers access via browser.
- Run Linux-based software demo on Windows laptop



Load Balancing

- Think of clusters in terms of VMs rather than of hardware nodes.
- When one hardware server is too busy, migrate a VM from that server to another.
- Currently, a slow, manual process. But it solves the problem.
- Likely that software to automate this will eventually appear



Grids

- Rent-a-grid age dawning. Amazon leading the way in public grids with:
 - Elastic Compute Cloud (EC2)
 - Simple Storage Service (S3)
 - Simple Queuing Service (SQS)
- Upcoming grids will enable configurable VMs and virtual I/O devices to be placed in grids on server farms anywhere in the world.



More on Grids

- Support for this kind of remote VM grid is available today from 3tera (www.3tera.com)
- Likely to be more players in this arena during the next few years

Java Without Underlying OS



- Improving performance by running the JVM directly on the VM
- Not really possible until virtualization standardized the underlying platform
- BEA's BareMetal Java is one example. Others likely to follow.

Thanks for coming!



- Q & A
- Follow up:

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Slides available shortly at:
binstock.blogspot.com