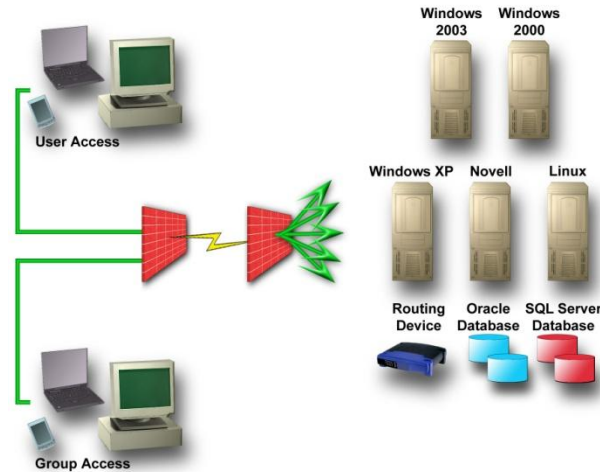


Web-Based Labs for Information Technology Training



Presented by LabMentors And Edaxis



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- Background: Blended Training Methodologies
- Issues related to live training delivery
- Considering the learner
- The Web-Based Lab
- Virtualization
- Web-Based Labs System Components
- Benefits of Web-based labs
- Case Study
- Summary/Contact Info

There are a number of methods commonly used to deliver IT training:

1. Physical Classroom (ILT, CBT)
2. e-Learning (LMS, WBT)
3. Self-paced Courseware (CD, DVD)

- Delivered from dedicated classrooms
- Computer-based training (CBT)
- Students attend class in person
- Live instructor
- Lan-based labs

- Physical classes are effective in part because the student is engaged and immersed in the learning process
- Lan-based labs provide hands-on access to the technology, not a passive learning experience
- Dedicated Student/Instructor interaction

- Usually delivered remotely
- Synchronous or asynchronous
- Learning Management Systems (LMS)
- Webinar/Web conferencing
- Collaborative threads

Very effective for a variety of reasons:

- More scalable than physical classroom
- Training materials can be deployed rapidly through LMS – can reach thousands of learners remotely
- Can be synchronous or asynchronous
- Online libraries provide abundant, invaluable resources including video, threads, simulations, demonstrations

- Usually delivered via CD/DVD
- Rich media training content
- Demonstrations
- Simulations/Testing

- Vast reach and distribution
- A massive amount of rich media training content, demonstrations and simulations/testing can be stored on one CD or DVD
- Student may learn at their own pace – re-learn and re-visit topics as many times as required

Each of the methodologies discussed thus far, have associated short-comings and issues related to technology, cost, and effectiveness. In this section we will briefly present some of these issues...

- Not readily scaleable to reach a large number of students
- Very expensive to implement and maintain
- Lack of flexibility for students

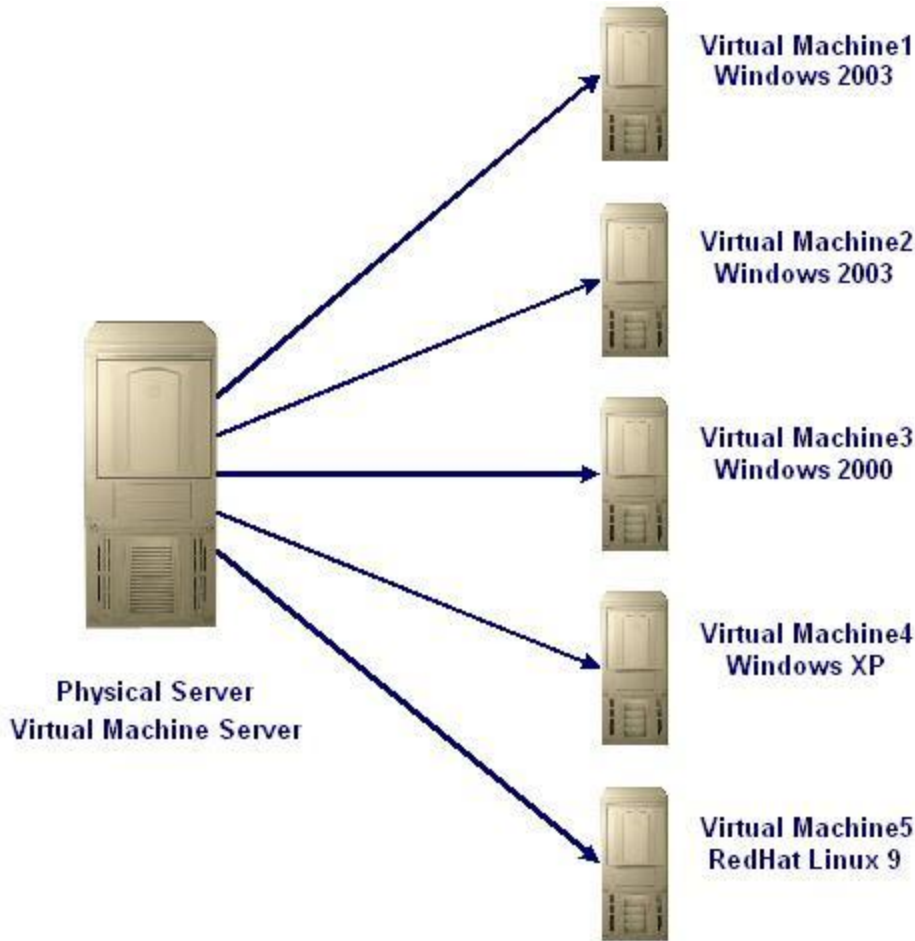
- Still very much a student learns by watching approach
- The synchronous mode of e-Learning faces the same 'timing' issues of the physical classroom
- Very difficult for instructor to discern whether students really comprehend the lesson
- Still only one instructor for a 'class' - scalability is somewhat dependent upon the instructor's ability to manage the 'class'

- Difficult to ensure that students actually learn the material
- Developing the rich media content can be very expensive
- The immersive and compelling value and quality of a live instructor is absent
- The responsibility is placed on the student to learn – student learns by reading, watching – a passive learning model
- Although some courseware provides simulations, these are not as effective as the hands-on approach

- The cost to deliver the training must be feasible to an organization: There must be a return on the investment, there must be a measure in place to properly gauge that return
- Appropriate resources must be available to 'deliver the goods'
- Should be a strategy in place for effectively utilizing online tools

- Learners may or may not 'read the manuals', just like programming a VCR, but like any technology, until they actually play with it, they will not become knowledgeable or experienced at it
- There are numerous studies that reveal the following: "Most people learn best by 'doing'. Comprehension & retention are significantly greater."
- There is a new and emerging technology that addresses these issues: web-based labs

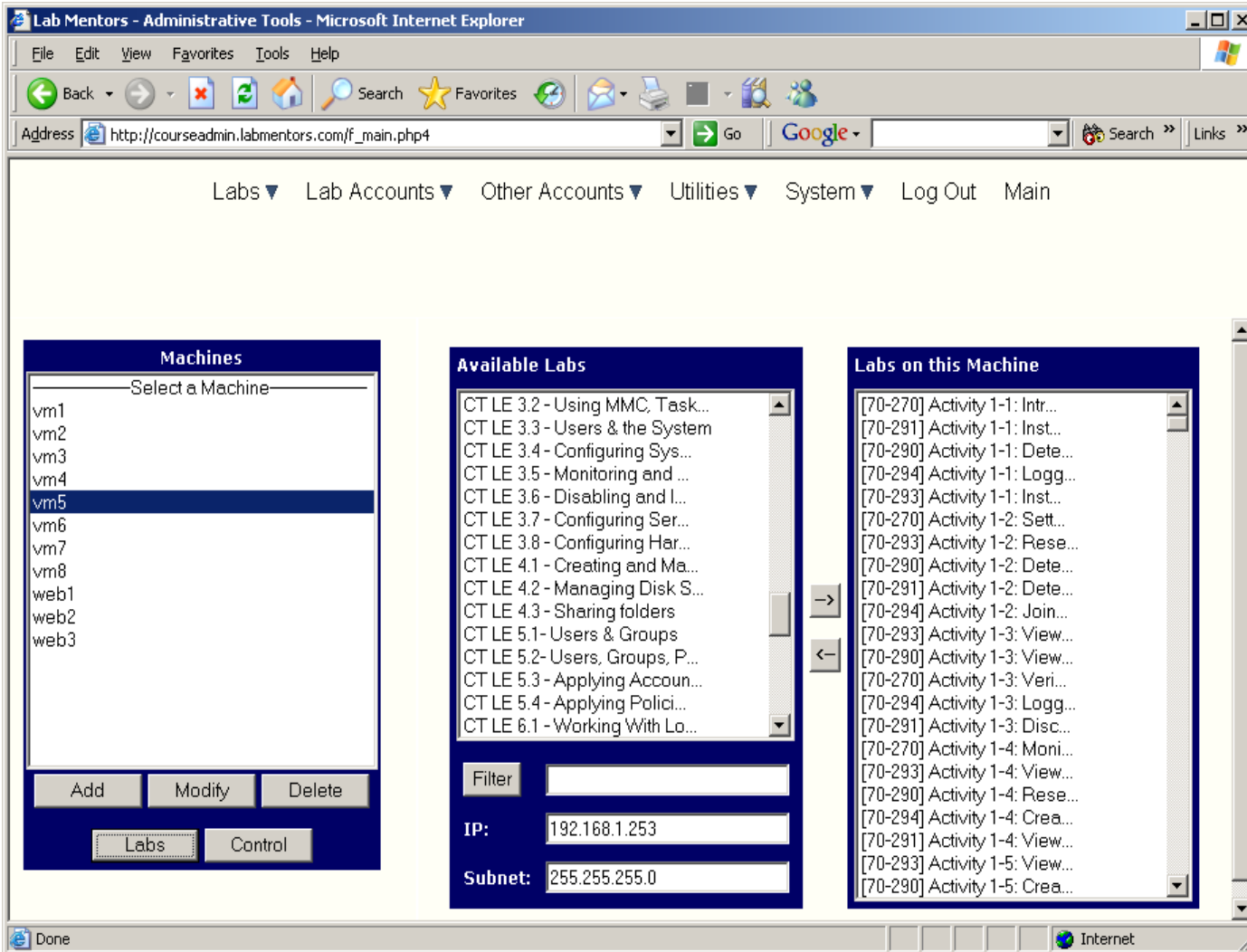
- Combines several technologies in an efficient and effective orchestration enabling users real, hands-on access to computer based equipment, software and resources remotely
- More than browsing content and or playing with simulations, the web-based lab is a compelling experience with live equipment
- Not an emulation tool, but a real live functioning operating system based on a 'Virtual Machine'



- A virtual machine is simply a mirror image of an Operating System running entirely in memory.
- Because of multi-threading technology and the computing power of today's servers, it is also possible with adequate memory to provide a number of these virtual machines running at the same time on one server. Furthermore, they don't even have to be the same type of operating systems.

Lab Management Module:

Administrative components providing lab designers and developers with a comprehensive set of tools to develop and maintain labs and the infrastructure that runs them.



Lab Mentors - Administrative Tools - Microsoft Internet Explorer

Address: http://courseadmin.labmentors.com/f_main.php4

Labs ▾ Lab Accounts ▾ Other Accounts ▾ Utilities ▾ System ▾ Log Out Main

Machines

Select a Machine

- vm1
- vm2
- vm3
- vm4
- vm5**
- vm6
- vm7
- vm8
- web1
- web2
- web3

Add Modify Delete

Labs Control

Available Labs

- CT LE 3.2 - Using MMC, Task...
- CT LE 3.3 - Users & the System
- CT LE 3.4 - Configuring Sys...
- CT LE 3.5 - Monitoring and ...
- CT LE 3.6 - Disabling and I...
- CT LE 3.7 - Configuring Ser...
- CT LE 3.8 - Configuring Har...
- CT LE 4.1 - Creating and Ma...
- CT LE 4.2 - Managing Disk S...
- CT LE 4.3 - Sharing folders
- CT LE 5.1 - Users & Groups
- CT LE 5.2 - Users, Groups, P...
- CT LE 5.3 - Applying Accoun...
- CT LE 5.4 - Applying Polici...
- CT LE 6.1 - Working With Lo...

Filter

IP: 192.168.1.253

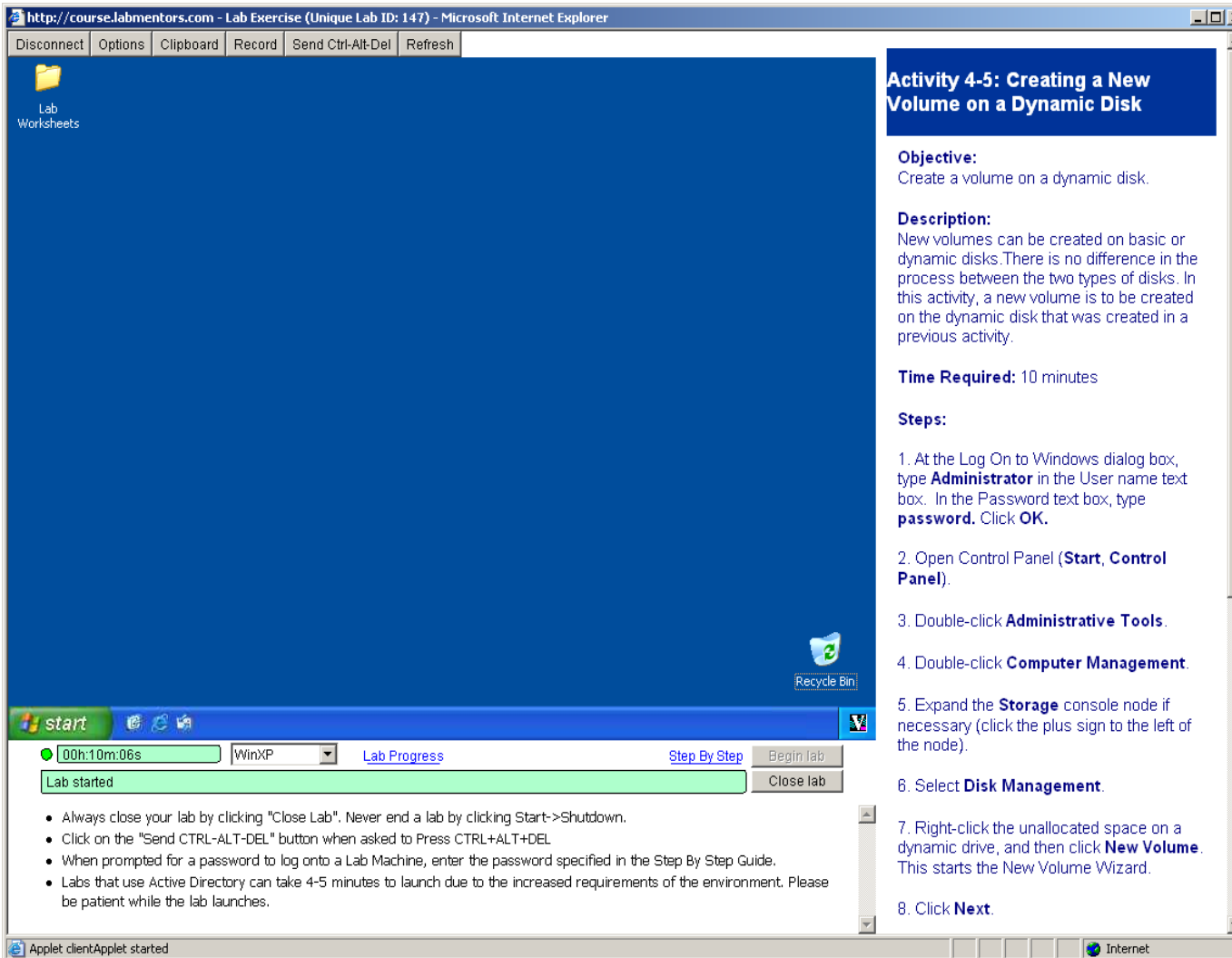
Subnet: 255.255.255.0

Labs on this Machine

- [70-270] Activity 1-1: Intr...
- [70-291] Activity 1-1: Inst...
- [70-290] Activity 1-1: Dete...
- [70-294] Activity 1-1: Logg...
- [70-293] Activity 1-1: Inst...
- [70-270] Activity 1-2: Sett...
- [70-293] Activity 1-2: Rese...
- [70-290] Activity 1-2: Dete...
- [70-291] Activity 1-2: Dete...
- [70-294] Activity 1-2: Join...
- [70-293] Activity 1-3: View...
- [70-290] Activity 1-3: View...
- [70-270] Activity 1-3: Veri...
- [70-294] Activity 1-3: Logg...
- [70-291] Activity 1-3: Disc...
- [70-270] Activity 1-4: Moni...
- [70-293] Activity 1-4: View...
- [70-290] Activity 1-4: Rese...
- [70-294] Activity 1-4: Crea...
- [70-291] Activity 1-4: View...
- [70-293] Activity 1-5: View...
- [70-290] Activity 1-5: Crea...

Lab Delivery Module:

Components that provide the infrastructure over which the web-based labs are delivered to the end user.



Activity 4-5: Creating a New Volume on a Dynamic Disk

Objective:
Create a volume on a dynamic disk.

Description:
New volumes can be created on basic or dynamic disks. There is no difference in the process between the two types of disks. In this activity, a new volume is to be created on the dynamic disk that was created in a previous activity.

Time Required: 10 minutes

Steps:

1. At the Log On to Windows dialog box, type **Administrator** in the User name text box. In the Password text box, type **password**. Click **OK**.
2. Open Control Panel (**Start, Control Panel**).
3. Double-click **Administrative Tools**.
4. Double-click **Computer Management**.
5. Expand the **Storage** console node if necessary (click the plus sign to the left of the node).
6. Select **Disk Management**.
7. Right-click the unallocated space on a dynamic drive, and then click **New Volume**. This starts the New Volume Wizard.
8. Click **Next**.

• Always close your lab by clicking "Close Lab". Never end a lab by clicking Start->Shutdown.
 • Click on the "Send CTRL-ALT-DEL" button when asked to Press CTRL+ALT+DEL
 • When prompted for a password to log onto a Lab Machine, enter the password specified in the Step By Step Guide.
 • Labs that use Active Directory can take 4-5 minutes to launch due to the increased requirements of the environment. Please be patient while the lab launches.

Lab Reporting Module:

Components for providing instructors and/or administrative staff to compile reports that help the instructor gauge student progress.

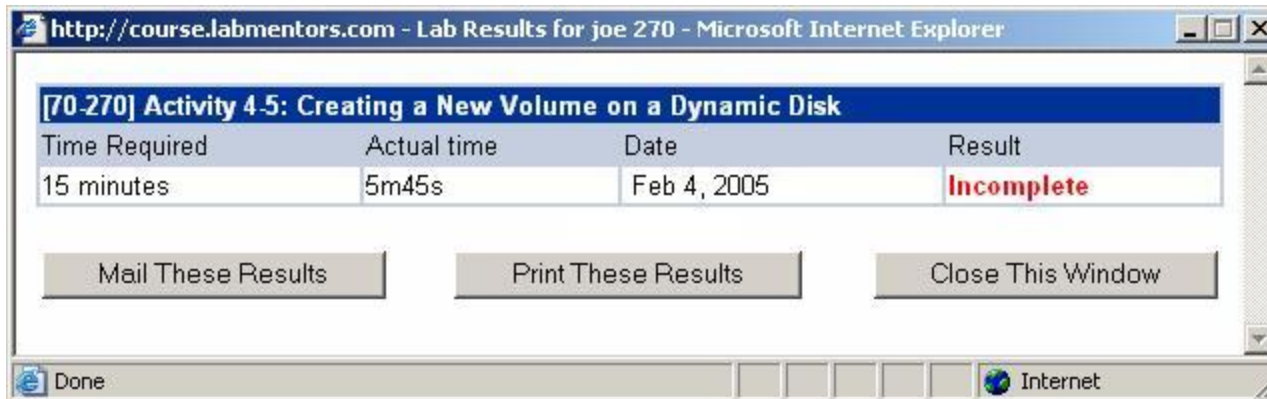
The screenshot shows a Microsoft Internet Explorer browser window displaying the 'Statistics' page of a web-based labs system. The page has a navigation bar with links for 'Course Home', 'Networking at Course.com', 'Support', and 'How to Buy'. Below the navigation bar is the Thomson Course Technology logo and a sidebar menu with options like 'Home', 'My Labs', 'Available Labs', 'My Profile', and 'My Students'. The main content area features two primary forms:

- Get statistics:** A form with a dropdown for 'All My Sections', date pickers for 'From: February 4, 2005' and 'To: March 4, 2005', and a 'Get Statistics' button.
- Weekly Course Summary:** A form with a dropdown for 'COURSE70-291 (Course Tech)', radio buttons for 'By Lab' (selected) and 'By Student', radio buttons for 'HTML' (selected) and 'Spreadsheet', a checkbox for 'Whole Course Duration', and date pickers for 'For the week of: March 4, 2005' and 'To: March 4, 2005', with a 'Get Summary' button.

An inset window titled 'Weekly Course Summary' displays a detailed report for a specific activity: '[70-291] Activity 1-2: Determine the Currently Installed Version of Windows Server 2003 [1 VM(s)]'. The report lists student names and their completion status, such as 'carlos torres (started: March 3, 2005@9:01 pm - duration: 3m11s)' with a 'Complete' status. It also shows real-time usage statistics: '0s real hours (0s lab hours) used out of 0s real hours (0s lab hours) allotted (100% real hours)'. Another activity is partially visible: '[70-291] Activity 1-3: Discover the Features of Windows Server 2003 Enterprise Edition [1 VM(s)]'.

Auto-Marking Module:

Components that provide for automatic marking of labs. This component checks to see if the task objective was completed by the learner.



Institutions, instructors, and students all benefit from LabMentor's solution. **Streamlined costs, increased flexibility, ease of maintenance and administration** are just some of the benefits. In short, web-based labs fill a major gap in the delivery of technical training that is not feasible otherwise.

Instructors/Institutions	Students
Instant Assessment	Enhanced learning experience
Progress Reporting	Real asynchronous learning
Low Setup Cost	Encouraged to experiment
Low Maintenance Cost	No fear of failure on live equipment
Reduced Licensing Cost	Blended learning implemented
Quick to market	

Compare the costs for 100 students studying Windows XP -
\$250,000 physical lab versus LabMentors' **\$10,000 virtual lab**:

Physical Lab		
space	5000 sq ft	\$50,000
computers	\$1000 ea	\$100,000
software	\$200 ea	\$20,000
maintenance	2 FT staff	\$80,000
Total:		\$250,000

LabMentors Virtual Lab		
Student cost	\$100 per student	\$10,000
Total:		\$10,000