RemoteLab 2.0

Computers + Windows Remote Desktop + RemoteLab = VDI

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https://mafudge.github.io/remotelab
WHAT IS REMOTELAB?

- A “Virtual Computer Lab” solution
- Software to manage access to computers configured with Windows Remote Desktop.
- Developed in house, released as open source: http://mafudge.github.io/remotelab/
WHAT TYPES OF CHALLENGES DOES THIS ADDRESS?
CHALLENGE: SOME STUDENTS NEVER SET FOOT ON CAMPUS...

1 in 4 classes are offered online.

We must provide the same lab experience independent of instruction mode.
CHALLENGE: STUDENTS NEED ACCESS TO SPECIALIZED SOFTWARE...
Challenge: Very little Open Lab Time...

During the academic year, there are only 2 hours of open lab time each weekday.
CHALLENGE: AVOID COMPLEXITIES OF SUPPORTING BYOD...

“I need to install Visio on my Mac”
CASE STUDY: IST722: DATA WAREHOUSING...

• Taught both on-campus and on-line
• Uses the same technology / lab activities.
• Technology: SQL Server, SSAS, SSIS, Excel with Add-Ins.
• Same “Butt in Seat” experience regardless of location
• Uses Remote Desktop, so Mac, Windows, Linux friendly.
DEMO

How students use remote lab
Why did we roll our own solution?
SOME BACKSTORY...

• Prior to 2011, we tried various solutions available at the time:
  • Citrix Presentation Server
  • Thinstall
  • Terminal Services
  • VMWare Lab Manager
• Too expensive, too difficult to deploy / support
• Our school is small we don’t benefit from economies of scale.
• Remote Desktop is well known; works on all platforms.
LEVERAGE WHAT YOU HAVE, LEVERAGE WHAT YOU KNOW

• Spare Computers / Computing resources
• Ghost for imaging
• Deepfreeze to maintain system state
• Keyserver for license management
• Windows Remote Desktop
• Active Directory / Group Policy Expertise
• Software / Database Developer Expertise **
HISTORY OF REMOTE LAB

2011
• Initial concept
• Private / Silent Beta

2012
• 1.0 Release
• LabMan 2012 Presentation @ SUNY Oswego

2013
• 2.0 Release
• Widespread use within iSchool

2014
• Finished 2.0 Features
• Re-packaged, released as Open-Source
HOW CAN I DO THIS AT MY INSTITUTION?
**YOU NEED**: ACTIVE DIRECTORY

- Authenticating / Authorizing Users
- Remote Management
- Group Policy For Applying Settings
- WMI - Execute Remote Commands
YOU NEED: COMPUTERS (HOSTS)

Computers:
- Old Lab Workstations
- Virtual Machines

Each One Should be:
- Domain Bound
- Remote Desktop Enabled
YOU NEED: THE REMOTE LAB APP

• Download it from GitHub
• Runs on Windows Server under IIS
• Requires an SQL Server Database

https://mafudge.github.io/remotelab
RemoteLab: Architecture

Active Directory

- Credentials
- Authentication, Group Membership

RemoteLab

IIS Website

- Login, Reserve, Clear Reservation

SQL Database

- RDP Check, Reboot
- Logon/off, Startup Shutdown Events

Feedback, RDP File

Users

Hosts
SETTING IT UP

1. Setup IIS, ASP.NET, .Net 4.5
   • Custom virtual host / Application pool
2. Create Empty SQL Server Database
   • Credentials to create objects in database
3. Unzip website from Github
   • Into IIS virtual host folder
4. Run setup.cmd
   • Configures application
SETUP / ADMIN Demo

We’ll setup Remote Lab and
GROUP POLICY OBJECTS (GPO)

1. Remote Desktop
   1. Configure Windows Firewall for RDP
   2. Allow users to Connect via RDP
   3. Configure RDP Settings
   4. Set Auto-Disconnect for idle session

2. Scripts
   1. Logon / Logoff / Startup / Shutdown
   2. Loopback mode so user settings apply to the computer
CONCLUDING REMARKS...
CHALLENGES / ADVICE

• Remote Desktop clients for Mac
• Low Bandwidth users
• Setting up the Application
• Managing all those Hosts.
• Imaging Virtual Machines.
Thank You!

Questions?

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• Remote Lab Project Site ➔ https://mafudge.github.io/remotelab
• Syracuse University iSchool ➔ https://ischool.syr.edu
• Technology Services ➔ http://ischool.syr.edu/facstaff/itservices.aspx