

**COMPUTERS + WINDOWS REMOTE DESKTOP + REMOTELAB = VDI**

Mike Fudge | Matt Schug

School of Information Studies

**SYRACUSE UNIVERSITY**

<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/>

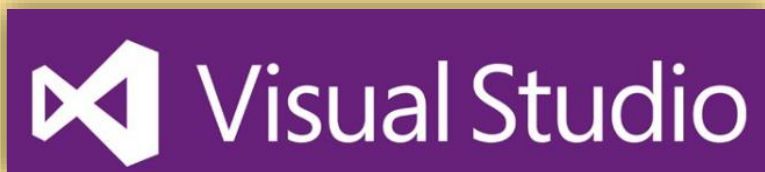
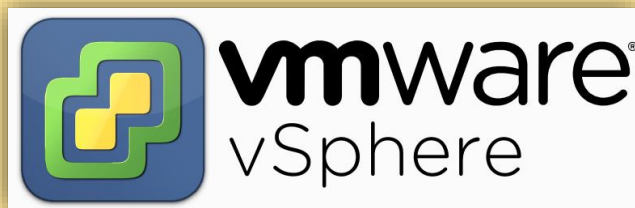
**WHAT TYPES OF  
CHALLENGES DOES THIS  
ADDRESS?**

**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 REMOTELAB

2011

- Initial concept
- Private / Silent Beta

2012

- 1.0 Release
- LabMan 2012 Presentation @ SUNY Oswego

2013

- 2.0 Release
- Widespread use within iSchool

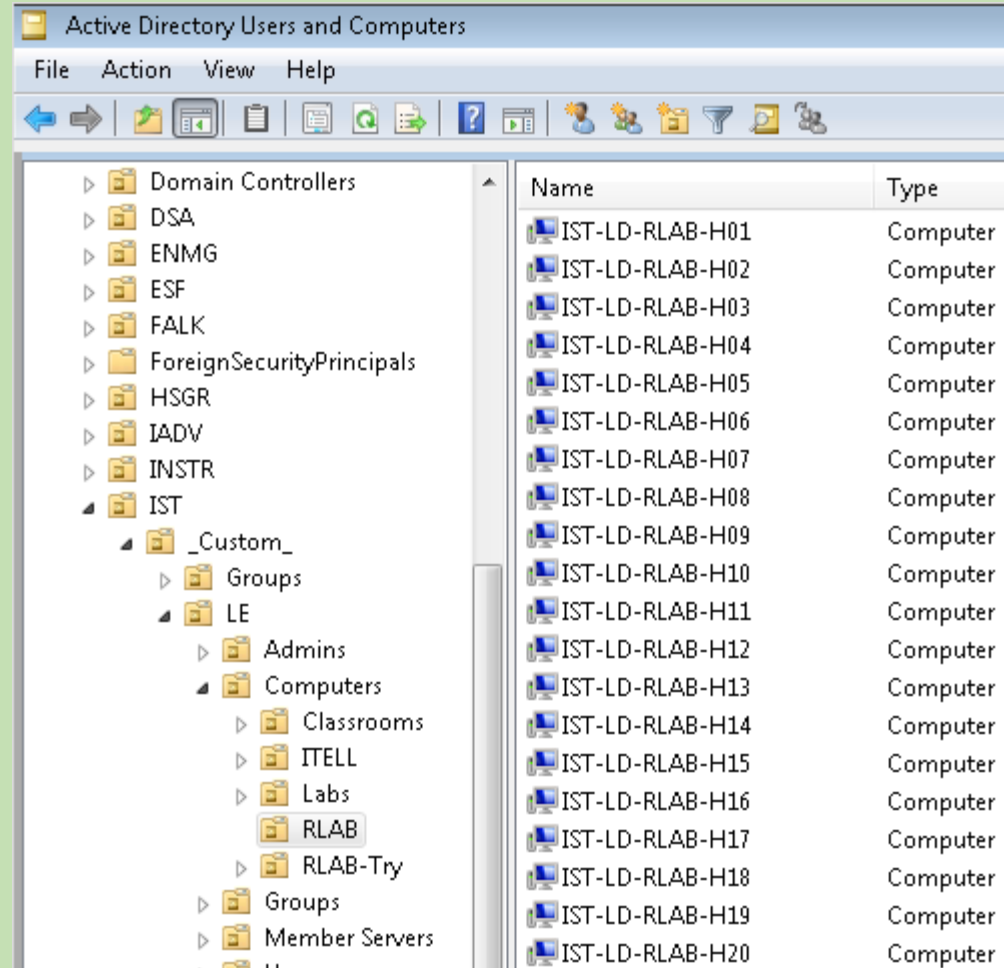
2014

- 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:

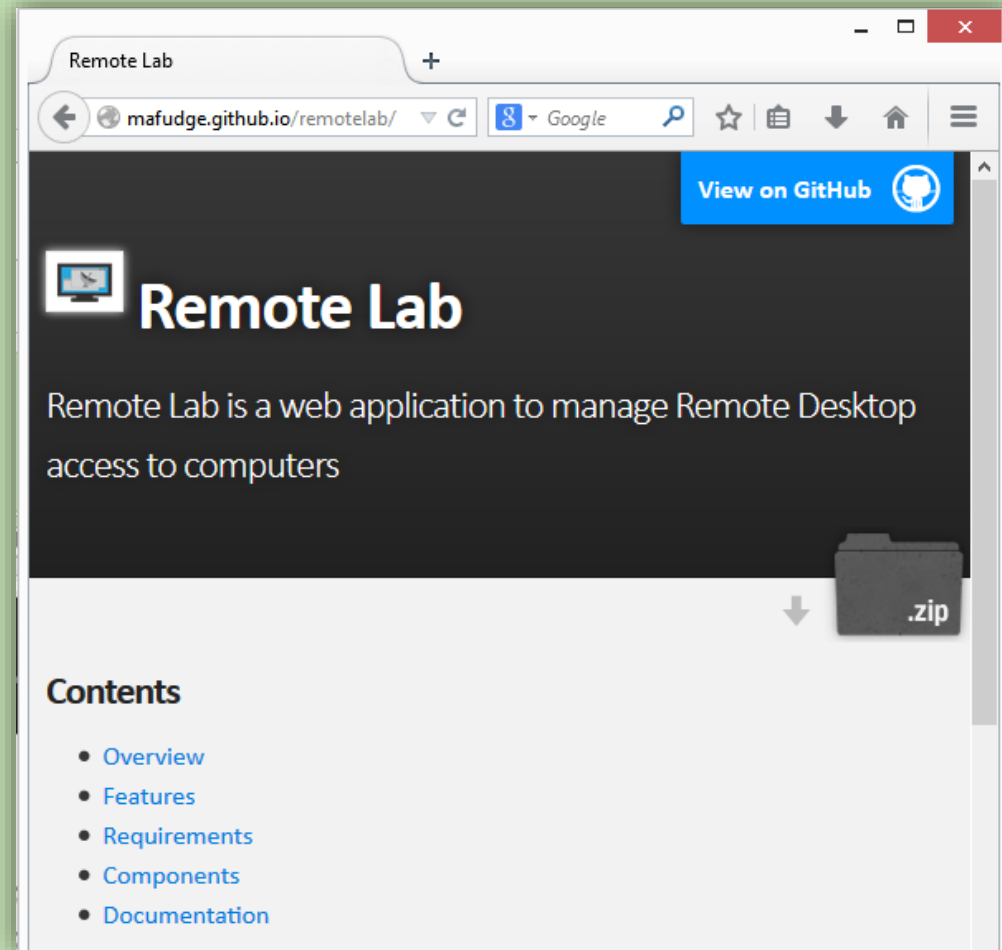
- Domain Bound
- Remote Desktop Enabled





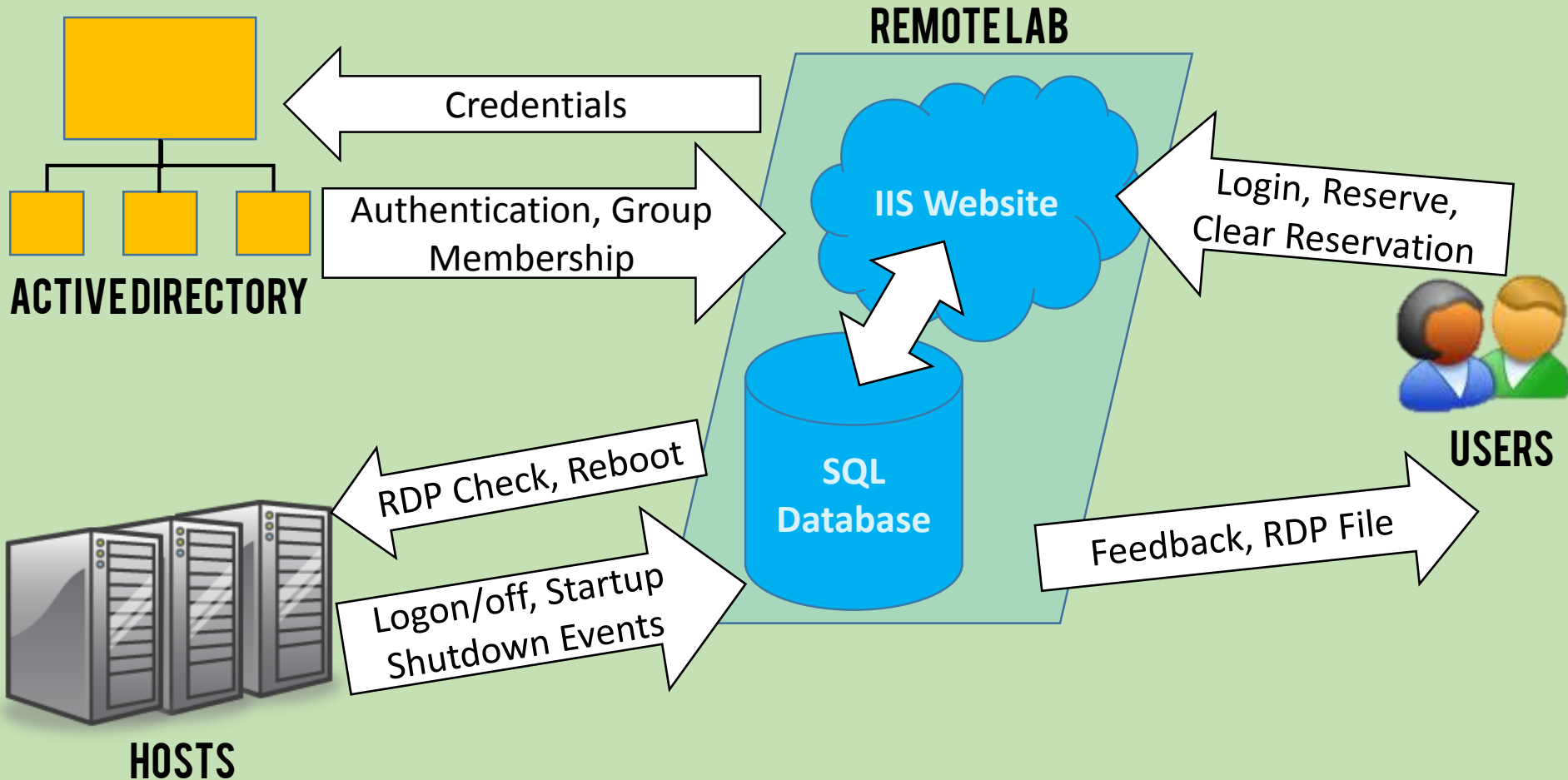
# YOU NEED: THE REMOTELAB APP

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



<https://mafudge.github.io/remotelab>

# REMOTELAB: ARCHITECTURE



# 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

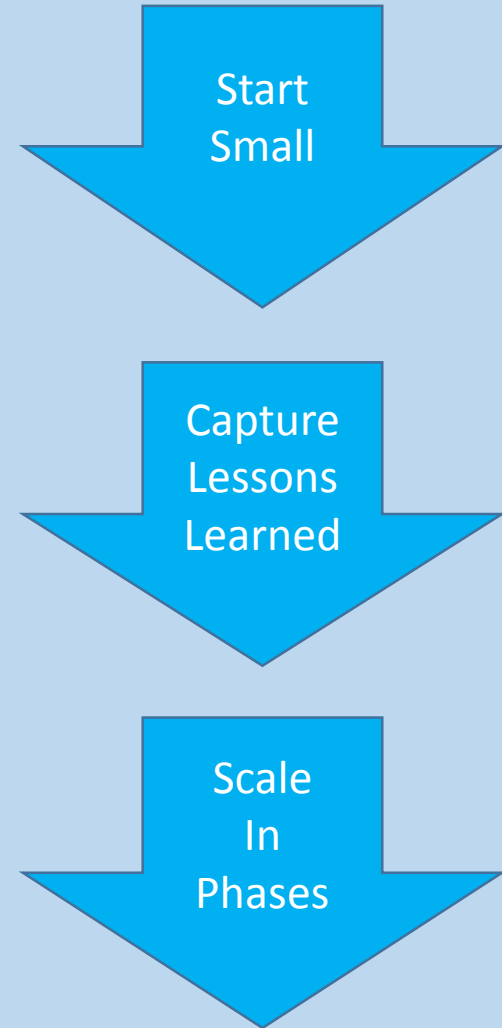
## 2. Scripts

1. Logon / Logoff / Startup / Shutdown
2. Loopback mode so user settings apply to the computer

**CONCLUDING  
REMARKS...**

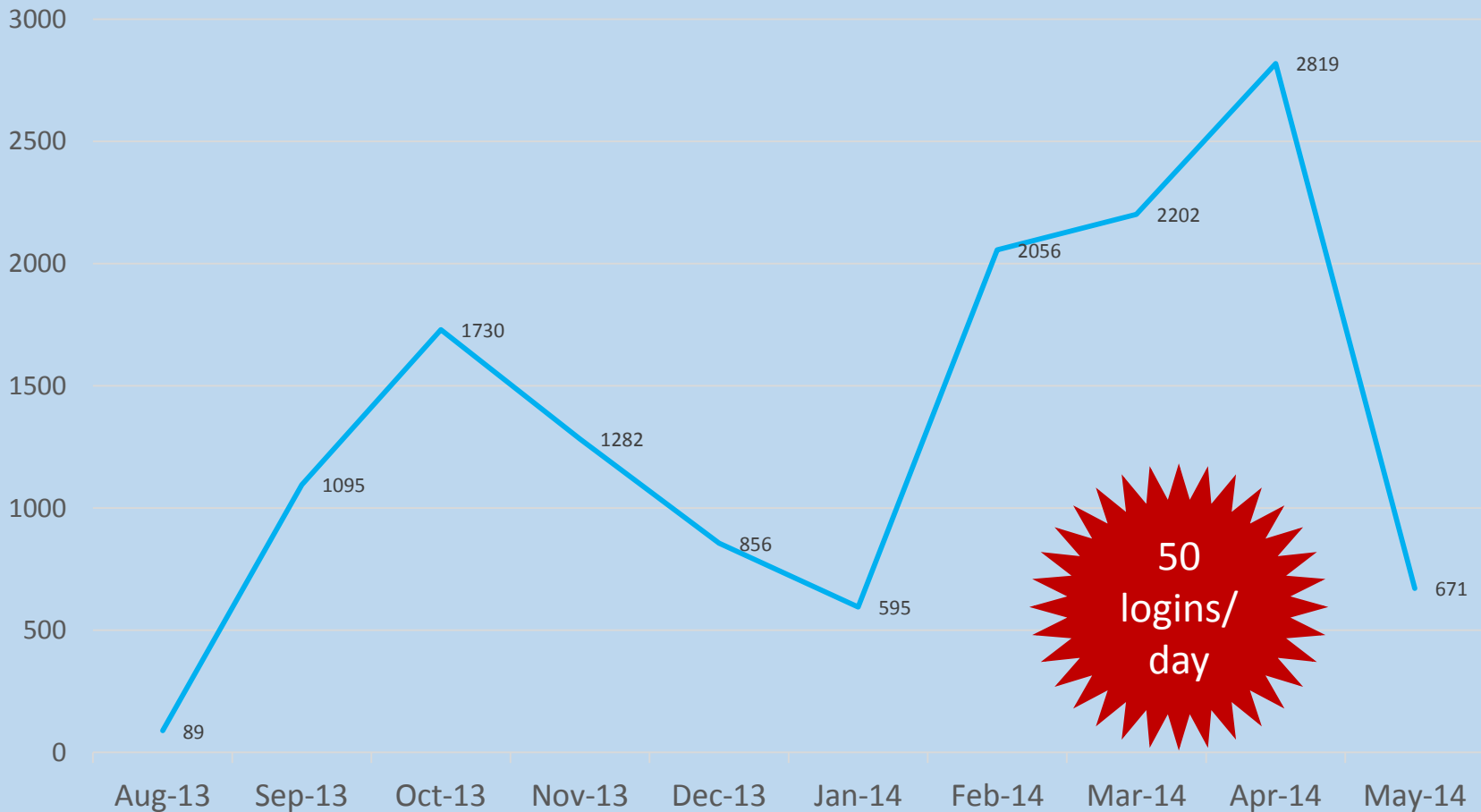
# CHALLENGES / ADVICE

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

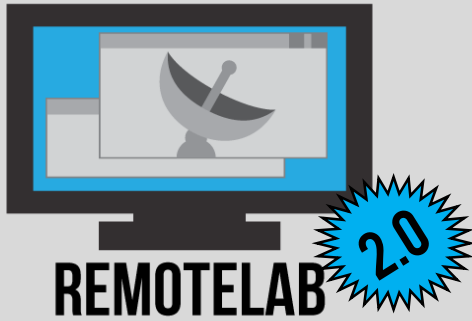


# UTILIZATION: 13-14 ACADEMIC YR

## LOGONS/MONTH FOR A 30 SEAT POOL







# THANK YOU! QUESTIONS?

- Michael Fudge → [mafudge@syr.edu](mailto:mafudge@syr.edu)
- Matt Schug → [mjschug@syr.edu](mailto:mjschug@syr.edu)
- 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>