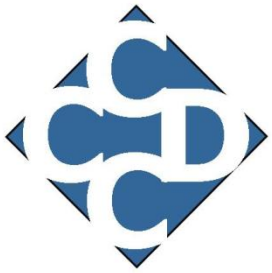


Collegiate Cyber Defense Competition

Team Practice for 2014 CCDC Qualification

The CSSIA Cyber Stadium has been updated for the 2014 CCDC season with new hardware, and team pods have been expanded to support up to 20 teams. Pods are being made available for teams throughout the Northeast, Southwest, West, and Midwest Regions to practice on the same system that will be used for qualifying competition. Regional managers and Midwest State Directors will be given credentials and pod assignments so they can oversee team practice and assure that all teams have opportunity. Managers will be able to schedule pods and change team passwords.

Access to the 2014 CCDCQ Cyber Stadium is at,

myvlab1.morainevalley.edu

Eight student accounts are assigned to each team, of the form,

vxu1, vxu2, vxu3, …, vxu8, where x = team# = pod# assigned to the team

The accounts for team 8 would be,

v8u1, …, v8u8

Managers are advised to schedule practice time for teams, recycling the accounts within NETLAB+™. The team topology is shown on the next page. The "Show Lab Content" button on the lower right will reveal privileged username:password for the various VMs, as well as their respective internal IP address. 'Public' addresses that teams will need to provide services to the core may be viewed from the pfsense VM. Login to pfsense, select 8) shell, and execute,

: pfctl –s nat

NISGTC Virtualization Center

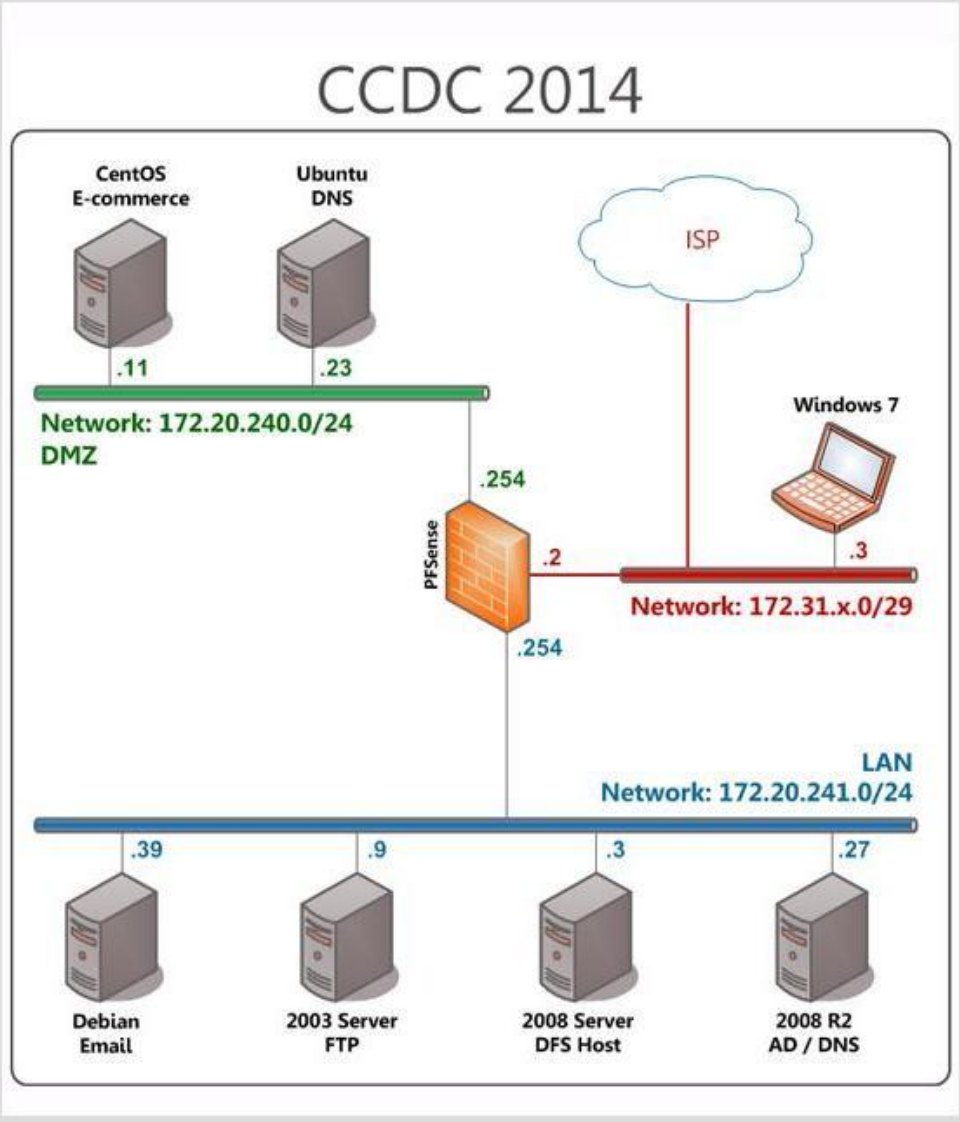
myVLAB 1

Lab Access

MyNETLAB Logout ddurkee

CCDC 2014 Team 1 54 minutes remaining I'M DONE

Topology | Action | Status | Connections



CCDC 2014 Show Lab Content

Addressing Access Problems to the NETLAB+™ System.

The NETLAB+™ platform from Network Development Group drives the remotely accessible Cyber Stadiums housed in the data center at Moraine Valley Community College (MVCC) used to host competitions and provide training. It is a proven system for access control provided the requirements are met. See, http://www.netdevgroup.com/products/requirements/

Generally the client requirements are easily met with simple browser and java plug-in. However,

the latest version of the java plug-in 7u51 is known to be a problem. To correct this, access the security tab of the java control panel, and include myvlab1… on the exception list. There may be a problem displaying the list in the java control panel, but should still work when accessing the Cyber Stadium.

Some browsers will simply download the script upon granting permission. The script then needs to be executed.

The bandwidth requirement likewise seems very reasonable at 256 kb/s up and down. Ports 80, 2201 must be allowed outbound.

Experience has shown that a significant majority of remote clients are able to access NETLAB+™ without incident. Nevertheless, it is not uncommon that difficulties are encountered using the NETLAB+™ platform. Problems may be a result of,

- poor network connectivity between the remote user and the data center at MVCC
- poor performance of the Viewer with some combinations of OS/browser/java

In addition to these problems it is imperative that VMWare Tools be maintained. A drifting cursor will result if VMWare Tools are removed.

For a team of 8 for the CCDC, the requirements call for a minimum of 2 Mb/s per team access bandwidth. Based on experience, CSSIA recommends 10 Mb/s service for competitions. The reason for this is more than just margin. The 256 kb/s requirement is for the typical user with a few open sessions. It is not unusual for competitors to have numerous open sessions that demand greater bandwidth. In passing, it is a good strategy to close sessions that will not be in use for an extended time. New sessions, with proper connectivity, open quickly when needed.

Bandwidth by itself is not determinative, and under many circumstances bandwidth is gauged by *download* speed. Note here **it is imperative to have a synchronous service**. Likewise, responsiveness of the services is also important without undue latency. Though a definitive metric for latency and packet loss is wanting, many of these difficulties are shown via a pathping test from the remote (windows) host accessing the stadium (and not from a VM within the stadium).

>pathping {cyber stadium url such as cyberlab.morainevalley.edu}

On Linux hosts use the mtr command in place of pathping.

#mtr --report {cyber stadium url such as cyberlab.morainevalley.edu}

Note that this test may be performed without authenticating into the stadium as long as the url is active. Care should be taken when performing a pathping test to make sure the command completes, which may take several minutes. Experience has shown that connections with more than a few percent loss will have performance problems. Certainly 4% or more packet loss on such a test will clearly be attended with poor performance on the NETLAB+™ platform.

MVCC continues to monitor data center performance which has been provisioned to easily support hundreds of remote connections. The problem of network connectivity is usually at the local institution from which the connection is made. Though there may seem to be adequate bandwidth, local institutions must assure synchronous service without undue filtering.

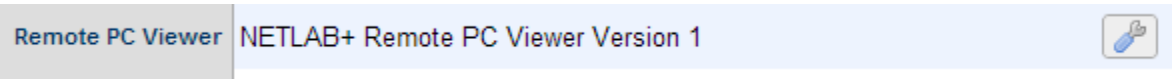
There may be a need for special provisioning at local institutions, even bypassing filters and firewalls for dedicated traffic to the stadium(s). Towards this end it is helpful to note the level of trust and the benign nature of traffic coming from the stadium(s). Though malicious traffic may be present in the competition or lab environment supported by the NETLAB+™ platform, it is impossible for this traffic to make its way back to remotely connecting sites.

Rarely, a remote site will experience difficulty due to packet loss somewhere in route in the big white cloud, and is not a result of faults either at the local site or MVCC. Institutions must contact their ISP to address such difficulties.

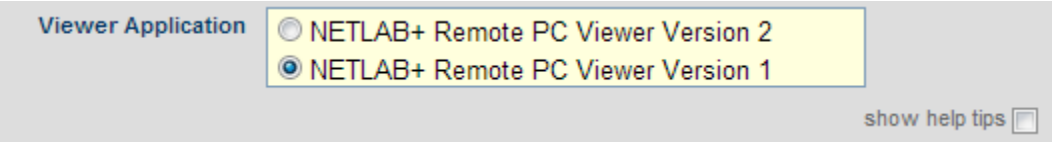
Even with excellent connectivity, there may still be problems with using the NETLAB+™ platform. The NETLAB+™ viewer has been programmed using java, and is sensitive to the specific combination of OS/browser/java version being used. With each update of java, the NETLAB+™ viewer may be affected.

Better response is often obtained simply by changing to a different browser. If this is unsuccessful, users may revert back to Viewer 1 instead of the default Viewer 2.

To change to Viewer 1, from the MyNETLAB page on the NETLAB+™ system, click on 'Profile' menu option or icon. Look for 'Remote PC Viewer' on the Profile page.



Click on the button on the right and select Viewer 1.



Fortunately most users accessing the NETLAB+™ platform do not experience difficulty. Hopefully the suggestions documented here will be helpful for those who do.