# NEW MEXICO STATE UNIVERSITY

Department of Computer Science

CS 209 System Administration Spring 2004

## Final Exam - Part 1 (50 points total)

**Name: .....**
**Date: Saturday, May 8, 2004**
**Time: 8:30 a.m. - 9:30 a.m.**

This test has two parts: part 1 is focused on the theory and concepts covered in the class and needs to be turned in before you start to work on part 2 that involves practical exercises on your computer in the lab.

All questions are of equal value. Answer them at the space provided. You can use reverse sides of each page or additional paper if you need extra space.

### Question 1 - Address Types

Explain what is unicast, multicast, and broadcast. For both Ethernet and IP protocols provide an example of each address type:

**Unicast**-

Example of Ethernet Unicast Address:

Example of IP Unicast Address:

**Multicast** -

Example of Ethernet Multicast Address:

Example of IP Multicast Address:

**Broadcast** -

Example of Ethernet Broadcast Address:

Example of IP Broadcast Address:

## Question 2 - IP Address Classes, Subnets and Netmasks

1. What are the 5 historic internet address classes?
2. How many network nodes can we have in a class C network?
3. What is subnet?
4. Assume that your machine is on an Ethernet network and that it has this IP address and netmask: 132.13.34.5 / 255.255.255.0. Assume also that its default (and the only) router's IP address is 132.13.34.1. What happens on your network when a packet is sent to 152.105.2.5? How does it differ from sending a packet to 132.13.34.13? Is ARP used in the communication?

## Question 3 - DNS

Describe what is DNS. What is its purpose, major parts and namespace. What files and daemons in Slackware Linux are related to DNS (for a server as well as a client)? How? What is a pointer query?

## Question 4 - NFS

Describe what is NFS and how can it be used in a network of computers. For both servers and clients describe what files and daemons in Slackware Linux are related to NFS? How?

## Question 5 - Security

What is the purpose of /etc/shadow file? What are the risks related to the permissions set on this file?

Explain, what are the security issues related to a root-owned program that has the suid permission bit set.

Describe, what would you do in order to secure your machine as much as possible. What kind of services would you allow and which ones would you forbid? What, why and how would you monitor on your machine?

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