CS312 Homework #4

February 18, 2015

Instructions

Please submit all answers as a single text file via T.E.A.C.H using the naming format `$onidusername-hw4.txt`. This homework is due at 4pm on Wednesday, Feb 25.

Questions

1. (1 pt) Describe three resources you might want to monitor on a server. Elaborate on how you might decide on acceptable thresholds for each resource.
2. (1 pt) Describe in detail the four components of Nagios.
3. (1 pt) Name three primary differences between active checks vs. passive checks for monitoring.
4. (5 pt) Create a new openstack VM and complete the following tasks. Keep in mind you will need to reload the `nagios` service each time you change the configuration file.
   (a) Install nagios and all of the nagios plugins. Show the commands you used.
   (b) Start and enable Apache, Nagios and NRPE daemons. Show the commands you used.

(c) Go to the nagios page `http://<your ip>/nagios` and login using `nagiosadmin` for both the user and password. Click on `Services` under `Current Status`. Copy and paste what you see for `localhost` including its services.

(d) Fix the HTTP check for the localhost object config (`/etc/nagios/objects/localhost.cfg`) so that it checks the `/nagios` URL. Make sure it returns OK (Hint: look at the help for the `check_http` plugin). Copy and paste the HTTP check on the nagios page. Also show the HTTP service definition including the changes you made to fix the check.

(e) Using the same config file above, create a new host to check called `cs312-server` using the IP `140.211.15.183`. Add ping, ssh and an http check for `http://cs312.osuosl.org`. Show the config you used and paste the output from the nagios page for the host including its services. Show the config line(s) you changed.

(f) Rename the `check_hda1` check in the NRPE config to `check_all_disks`. Fix the command so that it checks all of the disks.

(g) Extra Credit (2pts): Show the command you would use to manually check to see if the NRPE check is working on the localhost. Also show the output of the command.

5. (1 pt) What is the difference between a recursive DNS server and an authoritative one? Explain when you would use each.

6. (1 pt) Please give a brief explanation of the following DNS record types:

```
A
AAAA
CNAME
MX
NS
NXDOMAIN
```

7. (1 pt) What is a glue record? Give a brief explanation of why they are necessary.

8. (2 pt) What are specificity and sensitivity? Give a 1-2 sentence description of each.

9. (1 pt) Give an example of a highly sensitive test that has low specificity.

10. (1 pt) What is time-series data? Give an explanation of why it is important.
11. (2 pt) Why does DHCP use the broadcast routing scheme?
12. (3 pt) Name the three types of allocation DHCP servers can use. Give an explantion of each.