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Linux Administration

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Script Research and Test Runs

The first part of my research was on the “date” command and how to use it properly in bash and how to print it out in the file name. The reason I added this was that it’s good to log the dates when you’re printing out important information like the network, because having logs of how your network was in the past can help with trouble shooting and noticing anomalies. Also having the date in the file name allows you to quickly sort through the days, instead of having to open each file individually.

The second command I researched was the resolvectl command which allowed me to get the Domain Names and DNS servers IP addresses of the Virtual Machine. I added this to my script because I needed to include the DNS information and this command was really easy to use and worked on both of my machines and is overall a really useful command.

Some more commands I added to my script were the exec, tee and 2>&1 and without these my script wouldn’t have been able to be as simple to run as it is. Let’s start off with exec, this command is used to execute other commands which I combined with tee allowing tee to not only copy the output of each command in the file but also print it out in the terminal. Finally, we have 2>&1 which starts off with 2 and this is used to get the file descriptor stderr, and then it uses > for the direction and &1 which is the stdout file descriptor. Now what this does is it redirects the output to itself essentially silencing output from the commands allowing everything to function properly.

Another command I added was the ip a command and this was important for the script because I needed to show the IP, and this command does just that and more. Not only does it show the IP address, but it also shows other information like the subnet mask, ipv6 information and more. Overall, it’s a pretty useful command and it’s replacing the old command ifconfig.

Lastly, we have the command “ss -lntup | grep “LISTEN”” which is what I used to check for open ports on the virtual machine. The reason I added this command was because it’s a requirement and also, it’s useful to know what ports you currently have open and they can also be compared later on when you run the network script again. The command works by first using “ss -lntup” (ss is the newer and better version of netstat) and “l” only looks for services that are listening on a port, “n” is used to show the port number but not the resolve name, “t” is used to show the tcp ports, “u” is used to show the udp ports and lastly we have “p” which shows the name of the programs that are listening. Then after it get’s all of that information it uses “grep “LISTEN”” which only prints out lines with LISTEN in them.

CentOS Sample Run: Text

Description automatically generated

Ubuntu Sample Run: Text

Description automatically generated

Github Link: <https://github.com/nstormx/Nathan_NetworkScript>A screenshot of a computer

Description automatically generated with medium confidenceText

Description automatically generated

Sources:

[networking - What DNS servers am I using? - Unix & Linux Stack Exchange](https://unix.stackexchange.com/questions/28941/what-dns-servers-am-i-using)

This discussion board helped me find a good command to use to get DNS and other types of information, specifically the “resolvectl” part

[bash - YYYY-MM-DD format date in shell script - Stack Overflow](https://stackoverflow.com/questions/1401482/yyyy-mm-dd-format-date-in-shell-script)

This discussion board helped me with formatting the date command, I also used “man date” to learn more about the command.

[bash - Redirect all subsequent commands' stderr using exec - Unix & Linux Stack Exchange](https://unix.stackexchange.com/questions/61931/redirect-all-subsequent-commands-stderr-using-exec)

This website was extremely helpful in helping me find out how to capture the whole output of a file and put it in a certain directory, the biggest help was the exec > >, tee and 2>&1 parts. Also the $HOME command came in handy to.

[io redirection - What does 2>&1 in this command mean? - Unix & Linux Stack Exchange](https://unix.stackexchange.com/questions/99263/what-does-21-in-this-command-mean#:~:text=2%20refers%20to%20the%20second,first%20file%20descriptor%2C%20i.e.%20stdout%20.)

This post helped me learn about the 2>&1 command because I wasn’t to sure how it worked.

[Get a list of Open Ports in Linux - Super User](https://superuser.com/questions/529830/get-a-list-of-open-ports-in-linux)

This website helped me find a good command to use for open ports and how the command itself works.