- The OSI Model
- The TCP/IP Model
- How these models look in practice
- An introduction to basic networking tools

Answer the questions below

Let's get started!

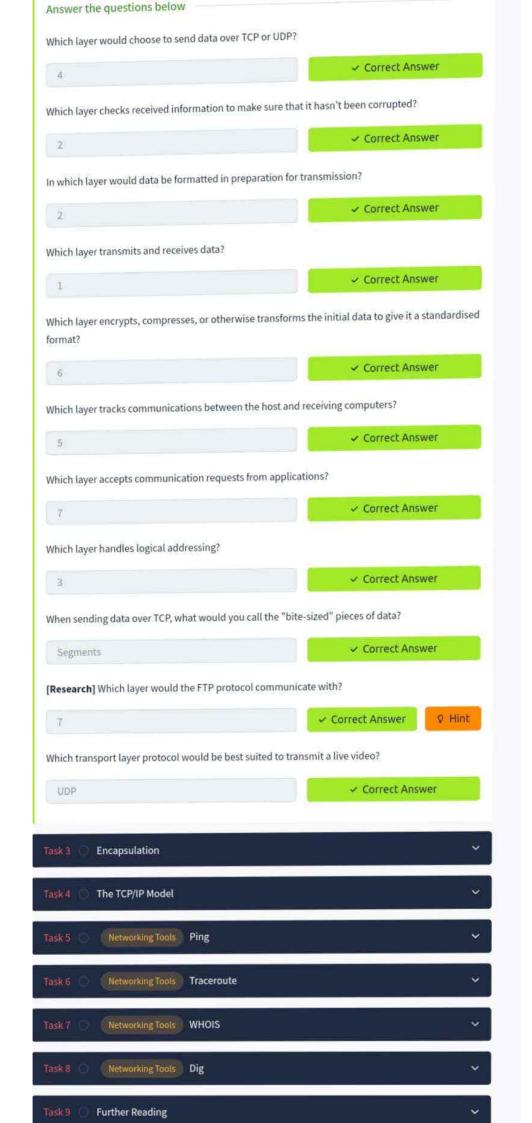
No answer needed

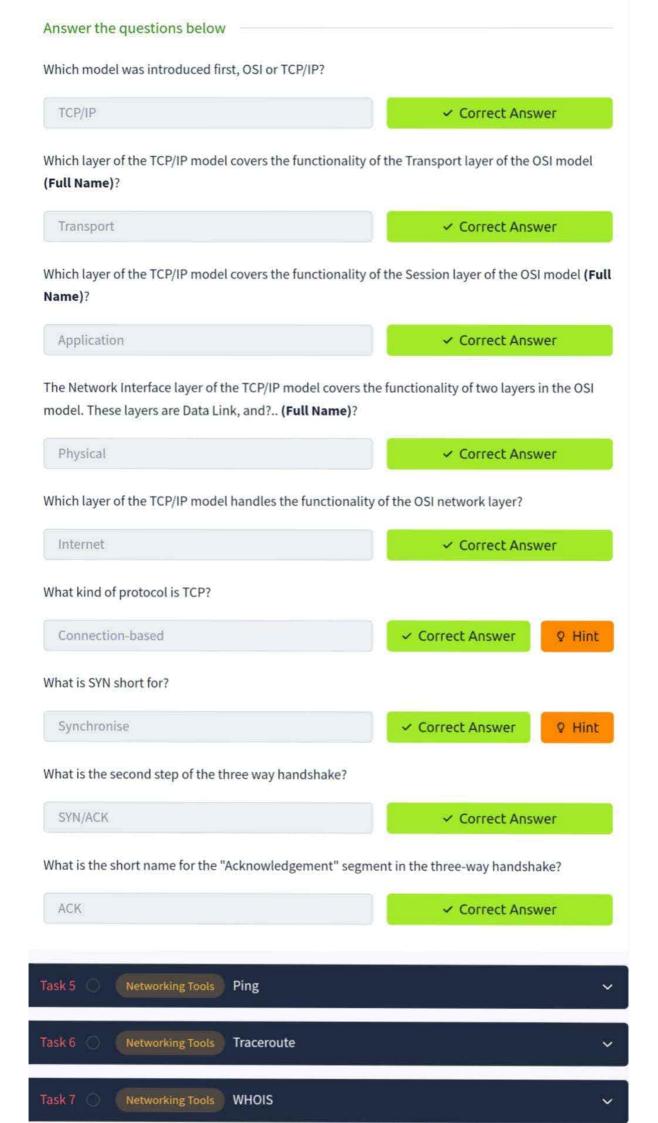
✓ Correct Answer

Task 2 The OSI Model: An Overview



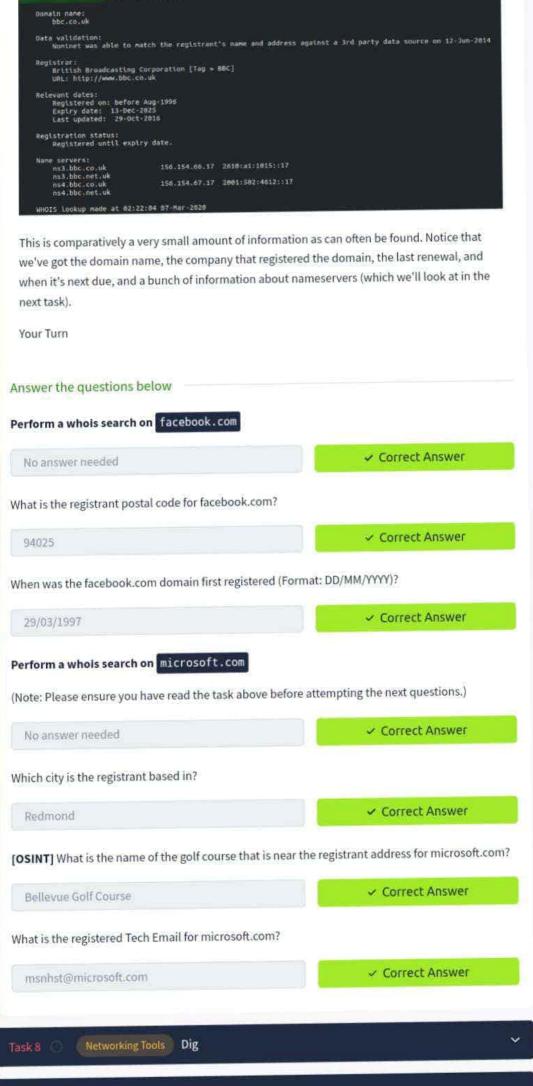






of these tools do work on other operating systems, but for the sake of simplicity, i in going to assume that you're running Linux for the rest of this room. The first tool that we're going to look at will be the ping command. The ping command is used when we want to test whether a connection to a remote resource is possible. Usually this will be a website on the internet, but it could also be for a computer on your home network if you want to check if it's configured correctly. Ping works using the ICMP protocol, which is one of the slightly less well-known TCP/IP protocols that were mentioned earlier. The ICMP protocol works on the Network layer of the OSI Model, and thus the Internet layer of the TCP/IP model. The basic syntax for ping is ping <target> . In this example we are using ping to test whether a network connection to Google is possible: \$ ping google.com PING google.com (216.58.198.174) 56(84) bytes of data Notice that the ping command actually returned the IP address for the Google server that it connected to, rather than the URL that was requested. This is a handy secondary application for ping, as it can be used to determine the IP address of the server hosting a website. One of the big advantages of ping is that it's pretty much ubiquitous to any network enabled device. All operating systems support it out of the box, and even most embedded devices can use ping! Have a go at the following questions. Any questions about syntax can be answered using the man page for ping (man ping on Linux). Answer the questions below What command would you use to ping the bbc.co.uk website? Correct Answer ping bbc.co.uk Ping muirlandoracle.co.uk What is the IPv4 address? Correct Answer 217.160.0.152 ♥ Hint What switch lets you change the interval of sent ping requests? Correct Answer 9 Hint What switch would allow you to restrict requests to IPv4? Correct Answer What switch would give you a more verbose output? Correct Answer Traceroute WHOIS **Networking Tools** Dig **Further Reading**

The logical follow-up to the ping command is 'traceroute'. Traceroute can be used to map the path your request takes as it heads to the target machine. The internet is made up of many, many different servers and end-points, all networked up to each other. This means that, in order to get to the content you actually want, you first need to go through a bunch of other servers. Traceroute allows you to see each of these connections -it allows you to see every intermediate step between your computer and the resource that you requested. The basic syntax for traceroute on Linux is this: traceroute <destination> By default, the Windows traceroute utility (tracert) operates using the same ICMP protocol that ping utilises, and the Unix equivalent operates over UDP. This can be altered with switches in both instances. reroute to google.com (216.58.285.46), 38 hops max, 60 byte packets gateway (172.16.255.254) 14.883 ms 15.401 ms 15.551 ms 193.60.160.253 (193.60.160.253) 1.464 ms 1.872 ms 2.026 ms 193.60.168.92 (193.60.168.92) 3.084 ms 4.093 ms 4.814 ms ge 8.3-2.dund-ban1.ja.net (146.97.128.85) 4.768 ms 4.253 ms 4.715 ms aei.dund-ban3.ja.net (146.97.64.97) 10.320 ms 5.114 ms 18.589 ms ae24.leedag-sbr2.ja.net (146.97.37.181) 11.160 ms 10.855 ms 10.766 ms ae29.lowdss-sbr1.ja.net (146.97.33.50) 11.992 ms 11.048 ms 10.746 ms ae31.londtw-sbr2.ja.net (146.97.33.30) 13.558 ms 13.245 ms 13.561 ms ae28.londtt-sbr1.ja.net (146.97.33.61) 13.541 ms 13.229 ms 11.410 ms 172.253.71.189 (172.253.71.189) 12.631 ms You can see that it took 13 hops to get from my router (gateway) to the Google server at 216.58.205.46 Now it's your turn. As with before, all questions about switches can be answered with the man page for traceroute man traceroute Answer the questions below Use traceroute on tryhackme.com Can you see the path your request has taken? Correct Answer No answer needed What switch would you use to specify an interface when using Traceroute? Correct Answer Q Hint What switch would you use if you wanted to use TCP SYN requests when tracing the route? Correct Answer [Lateral Thinking] Which layer of the TCP/IP model will traceroute run on by default (Windows)? Correct Answer Internet WHOIS Task 8 Networking Tools **Further Reading** Task 9



a great resource to work from. There may be a more up to date version available; however, this edition is cheap, readily available, and most importantly, still very relevant. Whilst it is designed to as a study guide for the CCNA exam, that book serves equally well as a very rounded introduction to networking principles.

Answer the questions below

Read the final thoughts

No answer needed

✓ Correct Answer