



Raspberry Pi

# What does our school network look like?

## Introduction

In this lesson, students will further develop their understanding of computer networks. They will see examples of network infrastructure in a real-world setting and relate them to the activities in Lesson 5.

## Learning objectives

To recognise the physical components of a network

- I can identify how devices in a network are connected together
- I can identify networked devices around me
- I can identify the benefits of computer networks

## Key vocabulary

Network cables, network sockets

## Preparation

### Subject knowledge:

- You will need to be familiar with how the main devices (network switch, server, wireless access point, router, and printer or copier) on your school's network are connected with one another, and where the devices are located. You may wish to discuss this with the IT technician prior to the lesson.
- You will need to know that network cables and network sockets are needed to connect devices in a network.

### You will need:

- Slides: [School network](#)
- Activities:
  - A2 Activity sheet – [Scavenger hunt](#) (optional)
  - A3 Activity sheet – [Mapping a network](#)
- A camera, or a tablet that can take photographs (optional)

## Assessment opportunities

**Activity 1:** You can assess whether students can explain the benefits of computer networks.

**Activity 2:** You can assess whether students can identify real-world network devices.

**Activity 3:** You can assess whether students can explain how different components are connected with one another in a computer network.

## Outline plan

Please note that the slide deck labels the activities in the top right-hand corner to help you navigate the lesson.

*\*Timings are rough guides*

<p><b>Introduction</b> (Slides 1–6)</p> <p>5 mins</p>	<p>Display slide 2 and introduce the learning objective and success criteria.</p> <p>Click through the animations on slides 3 to 5 to remind students of three network components. Ask students to discuss what the network components do.</p> <p>Display slide 6. Explain to students that a number of other components are part of a network, including:</p> <ul style="list-style-type: none"> <li>● Network (Ethernet) cables</li> <li>● Network (Ethernet) sockets</li> </ul> <p>Click through the animations on slide 6 to show students the definitions of ‘network cable’ and ‘network socket’.</p>
<p><b>Activity 1</b> (Slide 7)</p> <p>5 mins</p>	<p><b>Discuss the benefits of computer networks</b></p> <p>Ask students the following questions. Once students have discussed these questions, invite them to give feedback to the class:</p> <ul style="list-style-type: none"> <li>● What kind of tasks does the school network let students and staff members do? Possible responses: On the school network, files can be accessed and shared, staff members can access the register and administration system, and messages can be sent easily between people. <b>Note:</b> Students may also talk about being able to access the internet. This is possible on most networks, however, a computer does not have to be part of a local network to connect to the internet, as is the case with many home computers.</li> <li>● Why is it useful for more than one person to be able to access information in school? Possible responses: It is useful because it means that information such as attendance information or shared projects can be accessed by more than one person, meaning that such information only needs to be entered once. Communication between staff members and students can be more effective.</li> </ul>
<p><b>Activity 2</b> (Slide 8)</p> <p>15 mins</p>	<p><b>Look at the school network</b></p> <p>Explain to students that they are going to go on a brief tour of the school to find the key components of the computer network discussed in the unit so far:</p> <ul style="list-style-type: none"> <li>● Devices</li> <li>● Printers or copiers</li> <li>● Wireless access points (WAPs)</li> <li>● Network (Ethernet) cables</li> <li>● Network (Ethernet) socket</li> </ul>

	<ul style="list-style-type: none"> <li>• Switch</li> <li>• Server</li> </ul> <p>You could ask students to take photographs of the various network components. They may also find other network devices, such as routers or firewalls.</p> <p>During the activity, remind students how information moves around a network. You could give the example of opening a file from the server on the class computer: the computer sends a request for the file through the wired or wireless network to the switch, which sends the request to the server, then the server replies, sending the file back through the switch to the class computer.</p> <p><b>Note:</b> During the tour, students might mention the internet at home, or the school internet connection. You will address this topic during the Plenary.</p> <p><b>Scaffolding opportunity:</b> You could adapt this activity into an ‘I spy’ game, scavenger hunt, or tally chart, and you could give students images of the devices that they need to find. You could use the A2 Activity sheet for this, adapting it for your chosen activity.</p> <p><b>Explorer task:</b> As students are finding the different network components, ask them to consider the purpose of each device:</p> <ul style="list-style-type: none"> <li>• What is the device’s job in the school network?</li> <li>• Is it vital to the network or optional?</li> </ul>
<p><b>Activity 3</b> (Slide 9)</p> <p>15 mins</p>	<p><b>Map your school network</b></p> <p>Display slide 9. Remind students how the parts of a network that they have seen during their network tour combine to form a network. Click through the animations on the slide to show how the following are connected:</p> <ul style="list-style-type: none"> <li>• Switch, server, and printer</li> <li>• Desktop computers</li> <li>• Wireless devices (laptop computers and tablet computers)</li> </ul> <p>Ask students to amend the network map on the A3 Activity sheet with where those devices were found in school.</p>
<p><b>Plenary</b> (Slides 10–11)</p> <p>5 mins</p>	<p><b>Discussion</b></p> <p>Display slide 10. Ask students to recap what a computer network is, and to discuss how networks can help us. For example, students might say that they can share files, and all staff members can access the register.</p> <p><b>What about the internet?</b></p>

	Display slide 11. During Activity 2, students may have mentioned the internet at home, or the school internet connection. Explain to students that the school network is connected to a <b>router</b> . The router provides a connection to the internet through an external cable.
<b>Conclusion</b> (Slides 12–13)  5 mins	Review the ‘Assessment’ and ‘Summary’ slides.

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