Computer networks

A **computer network** is when two or more computers or devices are connected together to allow them to communicate

This brings many benefits

Computer networks

We use computer networks in all sorts of ways:

- sending an email or a text message
- saving and sharing work using OneDrive
- streaming music or videos
- connecting to a bluetooth speaker
- printing a document
- accessing a website
- using an app to buy a bus ticket

Computer networks

Computer networks are made up of **devices**

These **devices** can be desktop computers, laptops, tablets, phones, printers, speakers as well as other devices

It is now more common for **devices** such as TVs, central heating systems, fridges, dishwashers and doorbells to be connected to a network

Computer networks

Example devices

Computer networks

Computer networks can use wires to connect devices. This called a **wired connection**. The devices in my classroom use a wired connection

Networks can also be connected using a **wireless connection**. This might use wi-fi or Bluetooth

Both of these ways of connecting computers have advantages and disadvantages

Computer networks

Each type of connection has pros and cons

	Wired network	**Wireless network**
Advantages	Faster connection More reliable Better security	No cables needed Lower setup costs Users can move around Can add extra devices easily
Disadvantages	Cables cost to install Hazards from cables Devices difficult to move as need cables Not all devices can use cables - phones, tablets	Slower connection Slower download speed Limited range - especially for Bluetooth Less secure
Security	Usually more secure as a hacker needs access to the network to access data	Greater risk as a hacker just needs to get access to the wireless signal

Computer networks

There are many benefits of using a network:

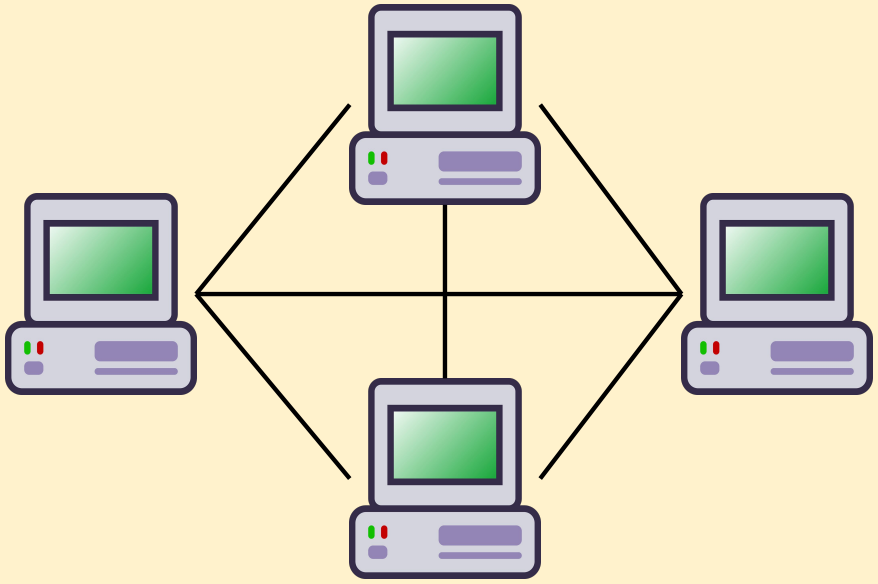
- share files and software packages easily
- communicate, including using email
- share resources such as printers and speakers
- access the internet to use websites and apps
- move from one computer to another but be able to access the same files

Networks do take time to set up though and don’t always work perfectly

Computer networks

A simple network is made up of computers joined together

But this needs lots links - for 4 computers it needs 6 connections. For 6 computers it's 15 connections

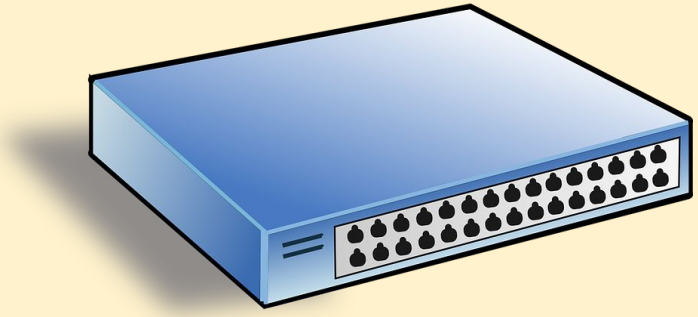


The individual computers in a network are called **clients**

Computer networks

A **hub** connects a number of computers together

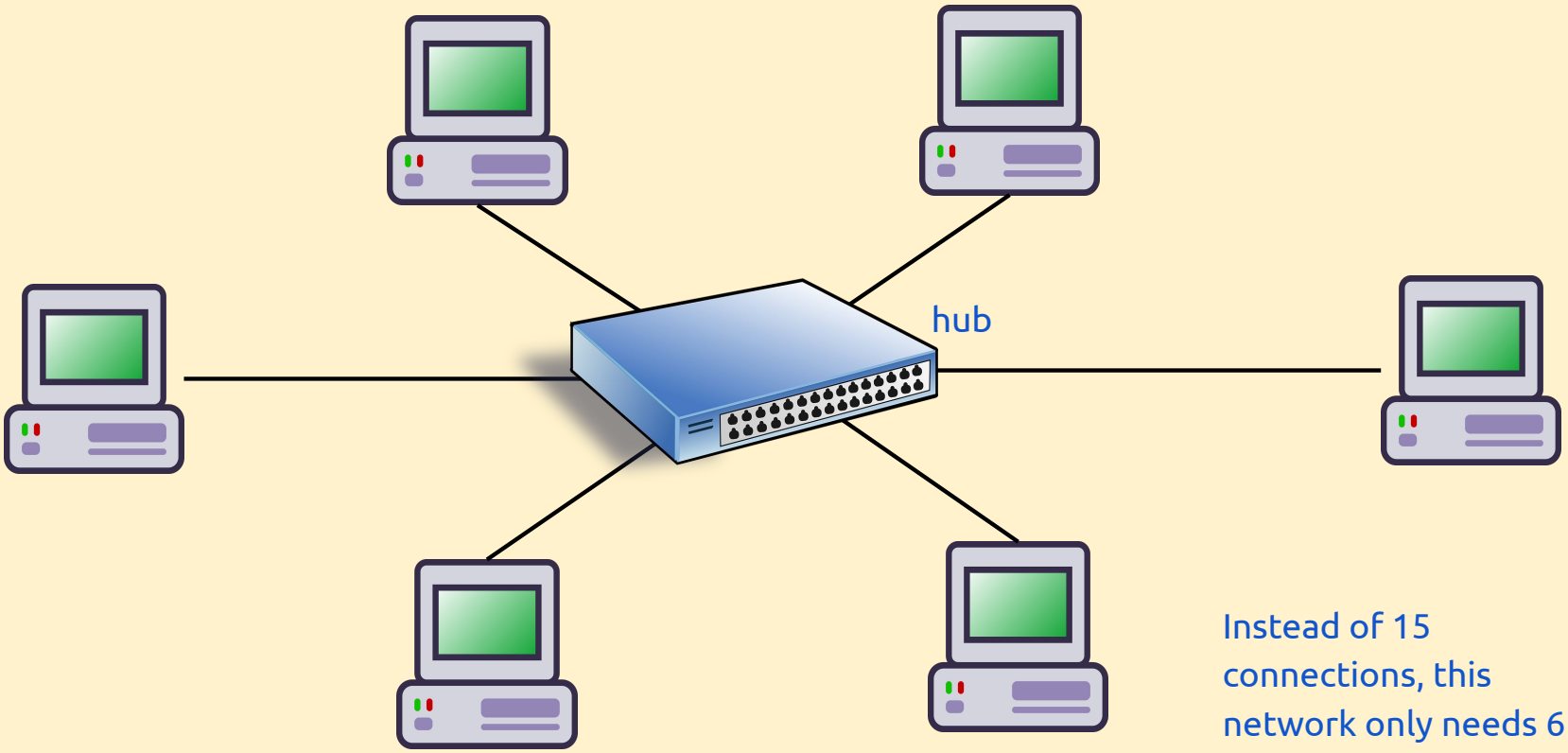
Ports allow cables to be plugged in from each connected computer. This reduces the number of links



A message sent from computer A to computer B travels via the hub

Computer networks

Using a hub massively reduces the number of connections needed



Instead of 15 connections, this network only needs 6

Computer networks

Some networks have a **server**

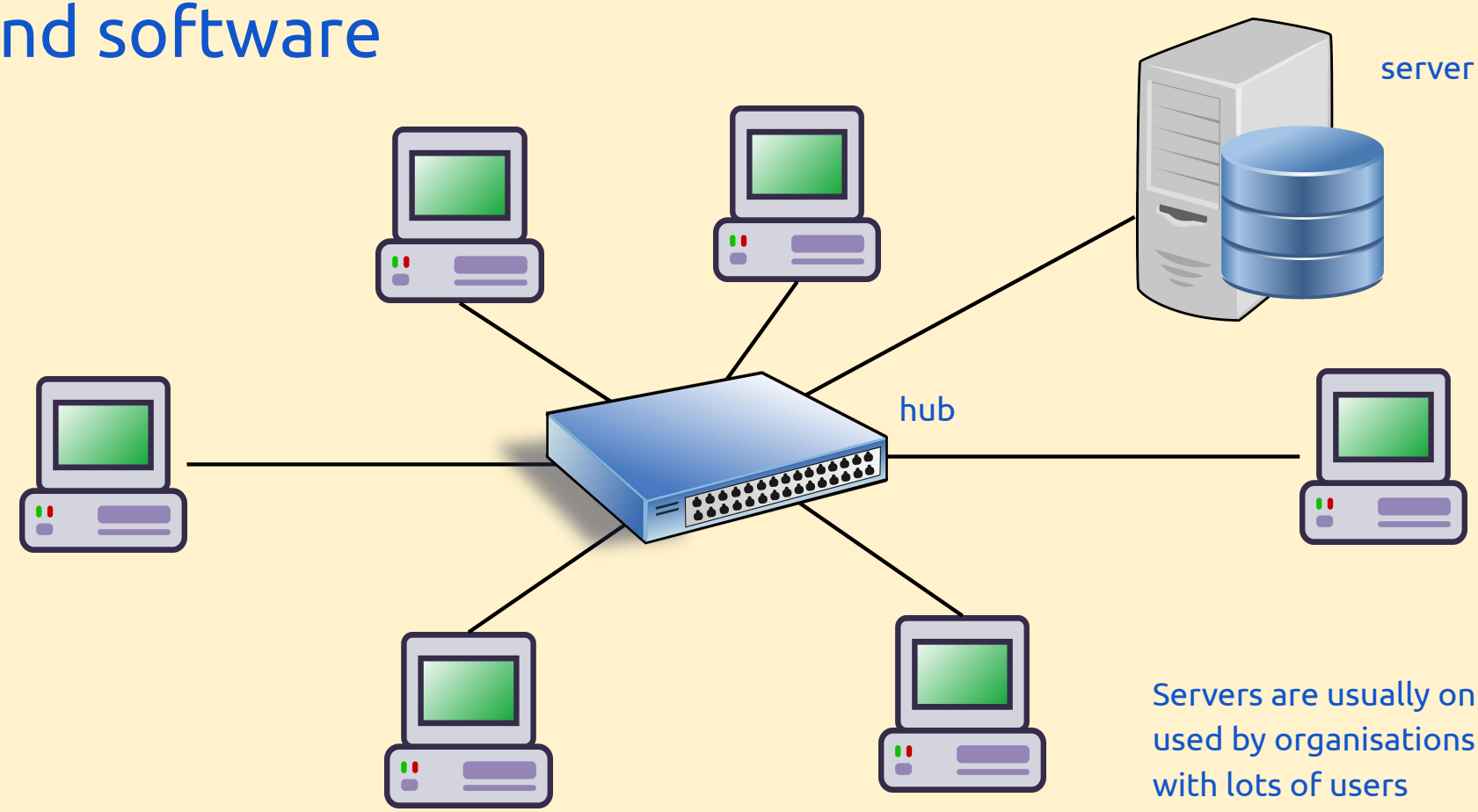
A server is a powerful computer which provides access to files and software

There are many different types of server, for example, a **file server** stores files (text, images, sound, or video)

A **web server** is a specialised server connected to the internet. When you click on a link on a website your computer (the **client**) requests the webpage or resource from the **web server**

Computer networks

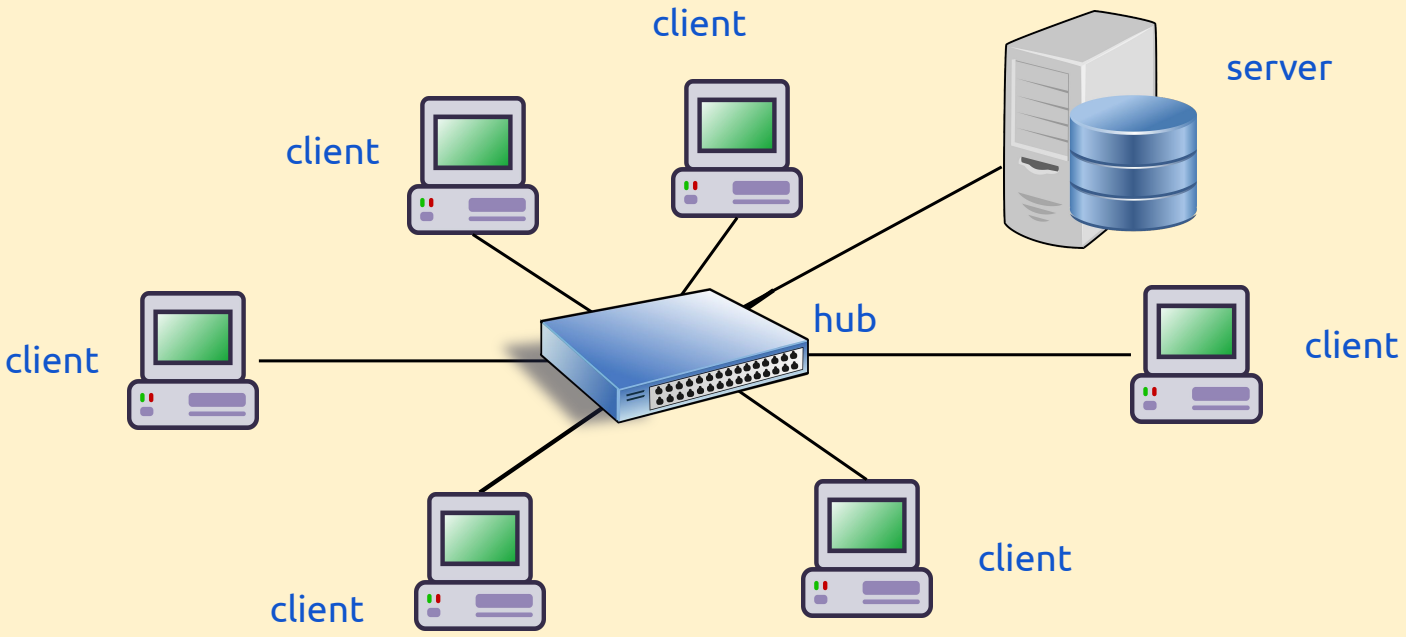
Adding a server makes it easier to share files and software



Servers are usually only used by organisations with lots of users

Computer networks

The individual computers in a network are called **clients**. The clients send requests for files or software to the **server**. The **server** delivers the resource to the **client** (your computer) using the network

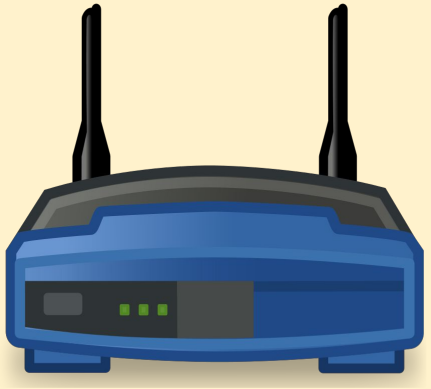


Computer networks

When a network needs to be connected to another network, a **router** is needed

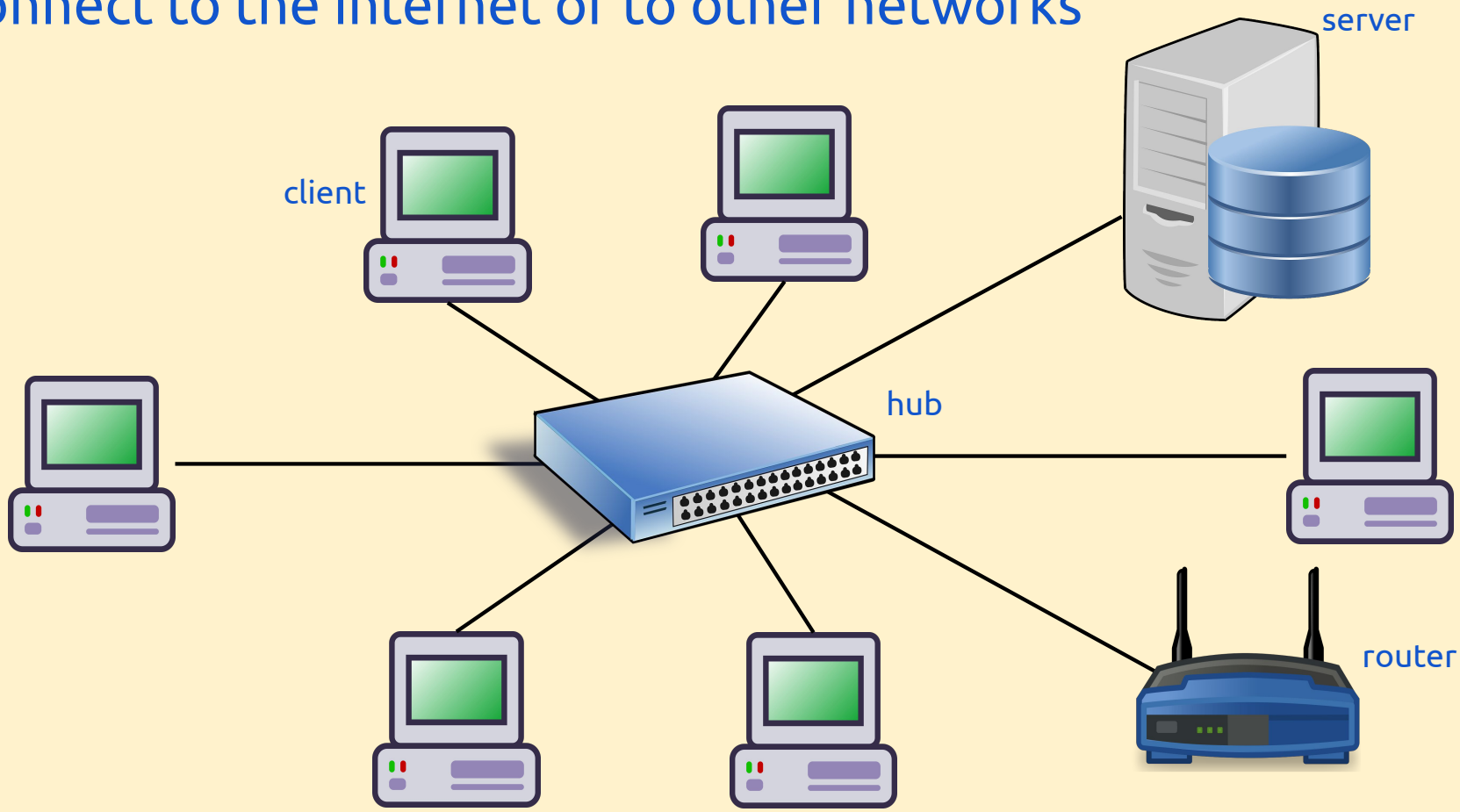
A router forwards messages from one network to another

A common job of a router is to join a network to the internet



Computer networks

Adding a router allows computers on the network to connect to the internet or to other networks



Computer networks

Other devices can be connected to a network

These could include printers, scanners, speakers, and devices such as Smart TVs

In a large network with lots of computers these would be linked to a hub