



Cloud Computing: Tour Learning

Tour Objectives: Students will learn what cloud computing technology is and what engineering roles come together to make AWS' cloud services possible.

Key Vocabulary:

The following vocabulary will be introduced in audio and visual format during the tour:

- **AWS:** Amazon Web Services.
- **Cloud Computing:** Cloud computing is the on-demand availability of computer system resources, especially data storage (cloud storage).
- **Data:** Data refers to raw facts, figures, or information that are collected, stored, and analysed to derive meaning or insights.
- **Data centre:** A data centre is a facility used to house computer systems and related components, such as servers, storage systems, networking equipment, and power supplies.
- **Server:** A computer whose function is to store, process, send, or receive data.
- **Content Delivery Network (CDN):** Content Delivery Networks - A CDN is a network of servers that caches content close to end users, improving website performance, security, and reliability.
- **Stream:** Using a computer app to access a large library of media on demand.
- **Content Delivery Network (CDN):** Content Delivery Networks - A CDN is a network of servers that caches content close to end users, improving website performance, security, and reliability.
- **Internet:** The internet is a global network of interconnected computers and servers that communicate using standardised protocols.
- **Computer network:** A computer network is a group of two or more computers and other devices connected together to share resources, exchange data, and communicate.
- **Protocols:** A protocol is a set of rules and standards that define how data is transmitted and communicated between devices in a network.
- **Storage:** Where data is saved—temporarily (RAM) or permanently (SSD, HDD).
- **IP:** IP stands for Internet Protocol. It is a set of rules that governs how data is sent and received over the internet or other networks.
- **URL:** A URL (Uniform Resource Locator) is the address used to access a resource on the internet, such as a web page, image, or file.
- **DNS:** DNS stands for Domain Name System. It is like the phonebook of the internet, translating human-friendly domain names (like www.google.com) into IP addresses that computers use to identify each other on the network.
- **Cyber security:** Cyber security is the practice of protecting computers, networks, systems, and data from digital attacks, damage, or unauthorised access.
- **Encryption:** Encryption is the process of converting data into a secret code to prevent unauthorised access. It ensures that only people with the correct key can read or understand the information.
- **Malware:** Malware (short for malicious software) is any type of software designed to harm, exploit, or secretly control a computer system, network, or device.
- **Artificial Intelligence (AI):** Artificial Intelligence (AI) is a branch of computer science that focuses on creating systems or machines capable of performing tasks that typically require human intelligence.
- **Machine learning:** Machine learning is a subset of artificial intelligence (AI) that involves building systems or algorithms that can learn from data and improve over time without being explicitly programmed.
- **Inputs:** Devices that allow users to interact with the computer (e.g. keyboard, mouse, touchscreens).
- **Outputs:** Devices that show or present information (e.g. monitors, speakers, printers).
- **Hardware:** Hardware refers to the physical components of a computer system — the parts you can see and touch.
- **Software:** Software is the set of instructions or programs that tell the hardware what to do. It is not physical and cannot be touched.
- **Sustainability:** Sustainability is the practice of meeting our current needs without compromising the ability of future generations to meet theirs.
- **Net Zero:** Net zero means balancing the amount of greenhouse gases emitted with the amount removed from the atmosphere, so the net effect is zero.



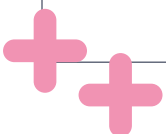
Key Student Learnings:



future >> engineer

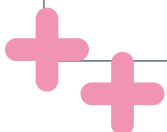


Stop:	Stop Questions:	Teach Computing Standard/s and Key Learnings:
<p>0 - What is the cloud?</p>	<p>1) What is the cloud? 2) What is the cloud used for at AWS?</p>	<p>Impact of technology - Understand how individuals, systems, and society as a whole interact with computer systems.</p> <p>First of all, what is AWS, and what does it mean to use cloud computing?</p> <p>AWS (Amazon Web Services) is a cloud platform that helps individuals and organisations build and manage powerful digital solutions. Cloud computing allows us to access data, applications, and services over the internet, whether we're streaming videos, browsing websites, or using apps, without needing to store them directly on our own devices.</p> <p>Cloud computing represents a major shift from traditional IT systems, where people had to rely on physical servers and hardware in a single location. With AWS, we can now connect to the tools and information we need from virtually anywhere in the world, at any time, powering everything from entertainment and education to healthcare and finance.</p> <p>This stop will lay the foundations for what students will explore on the Career Tour. From the technologies that underpin AWS - like networks, cyber security, and sustainable computing - to the careers that bring it all together, including cloud architects, security engineers, and data specialists, students will gain an exciting behind-the-scenes look at the world of cloud innovation.</p>
<p>1 - Introduction to Cloud Computing</p>	<p>1) What is a Data Centre Operator? 2) What role do data centres play in cloud computing?</p>	<p>Data and information - Understand how data is stored, organised, and used to represent real-world artefacts and scenarios.</p> <p>What is a Data Centre Operator, and what does this have to do with the cloud?</p> <p>In this stop, students will meet a Data Centre Operator at AWS, who plays a key role in making cloud computing possible. Cloud computing might sound like something floating in the sky, but in reality, it's powered by physical infrastructure, and that's where data centres come in.</p> <p>Data centres are enormous buildings filled with thousands of powerful machines called servers. These servers store, process, and manage the data behind the apps, games, and streaming services we use every day. Data Centre Operators help keep this critical technology running smoothly. From monitoring servers and fixing hardware to working with teams across AWS, their work ensures that millions of people can connect to cloud services without interruption.</p> <p>Students will learn how data travels through fibre-optic cables and understand how much information flows through AWS (hint: it's enough to stream millions of films at once!), and they will begin to see just how much goes on behind the scenes.</p> <p>Whether it's delivering your favourite TV show, storing photos, or powering new technologies like AI, cloud computing is shaping the future - and it all starts with roles like this one.</p>
<p>2 - Computer Networks</p>	<p>1) What is a network? 2) What is a protocol? 3) What do URL and DNS mean?</p>	<p>Networks - Understand how networks can be used to retrieve and share information, and how they come with associated risks.</p> <p>Did you know the World Wide Web isn't the same as the internet?</p> <p>The Internet is actually a huge network of connected computers, and the web is just one part of it. In this stop, a Network Engineer at AWS will help us understand how these networks work.</p> <p>From routers and switches to servers and cables, networks allow our devices to talk to each other and share data. This stop will explain the difference between local networks, like those at home, and global networks, like the Internet. We'll also learn how protocols, such as IP, help devices follow the same rules to send and receive information.</p> <p>We'll discover how tools like URLs and DNS help your device find the data it needs, and how security features like firewalls and encryption keep that data safe. The Network Engineer will also share what it's like to work in networking, how they got into the field, and tips for getting started.</p> <p>By the end of this stop, students will understand how the Internet keeps us all connected and how networks make that possible.</p>



Key Student Learnings:

Stop:	Stop Questions:	Teach Computing Standard/s and Key Learnings:
3 - Cyber Security	<p>1) What do we mean by 'cyber security'</p> <p>2) What does a cyber attack look like?</p> <p>3) What layers of protection are there at AWS?</p>	<p>Safety and security - Understand risks when using technology, and how to protect individuals and systems.</p> <p>Cyber security is about protecting data, devices, and networks from digital threats. At AWS, that means keeping cloud systems safe for millions of users worldwide.</p> <p>In this stop, we'll be joined by a Cyber Security Specialist at AWS, who helps defend the cloud every day. We'll explore what a typical day looks like for someone working in cyber security, and how AWS protects its systems with multiple layers of security, from locked-down data centres and encrypted data to software that spots threats in real time using machine learning.</p> <p>This stop will explain how encryption works (think of it like locking your diary with a secret code) and how AWS and its customers collaborate to keep data secure.</p> <p>Finally, we'll explore how cyber attacks happen, how AWS responds, and what makes working in this field so rewarding. By the end of this stop, students will see just how important cyber security is—and how cloud defenders help keep the digital world safe.</p>
4 - Physical Components of a Computer	<p>1) What are the four main physical components of a computer?</p> <p>2) Why does hardware need software for your computer system to work?</p>	<p>Computer systems - Understand what a computer is, and how its constituent parts function together as a whole.</p> <p>Have you ever wondered what makes a computer actually work? In this stop, we'll break it down and explore the key parts that power everything from laptops to cloud servers.</p> <p>We'll learn about the four main components of a computer: inputs (like keyboards or touchscreens), storage (where data is saved), processing (the 'brain' of the computer), and outputs (like screens and speakers). These pieces work together, just like the organs in a body, to form a complete system.</p> <p>We'll also examine the difference between hardware and software and how they need each other to accomplish tasks. We'll also explore some cool tech, like touchscreens that count as both input and output.</p> <p>By the end of this stop, students will understand what's really happening inside a computer—and how those same components are found in phones, laptops, and even cloud computing systems.</p>



Key Student Learnings:



Stop:	Stop Questions:	Teach Computing Standard/s and Key Learnings:
5 - Sustainability	<ol style="list-style-type: none">1) What role does sustainability play at AWS?2) What initiatives are taking place at AWS to make all areas of the business more sustainable?	<p>Impact of technology - Understand how individuals, systems, and society as a whole interact with computer systems.</p> <p>Data centres power everything from streaming our favourite shows to browsing the web, but they also have an environmental footprint.</p> <p>In this stop, we explore how AWS is working to reduce that impact through innovation and sustainability.</p> <p>We'll learn how data centres use water to stay cool and how AWS is working to become water positive by 2030 through rainwater harvesting, recycled water use, and community replenishment projects. We'll also discover why shared data centres are more energy-efficient than individual servers, and how AWS is cutting carbon emissions and leading in renewable energy investment.</p> <p>From recycling old hardware to striving for net-zero carbon emissions by 2040, students will gain a clear view of how sustainability is at the heart of cloud operations - and why it matters for the planet.</p>
6 - Recap	<ol style="list-style-type: none">1) What have we learnt about AWS in this Career Tour?	<p>Impact of technology - Understand how individuals, systems, and society as a whole interact with computer systems.</p> <p>That's a wrap! This final stop brings everything together - from data centres and networks to cloud computing and cyber security.</p>

