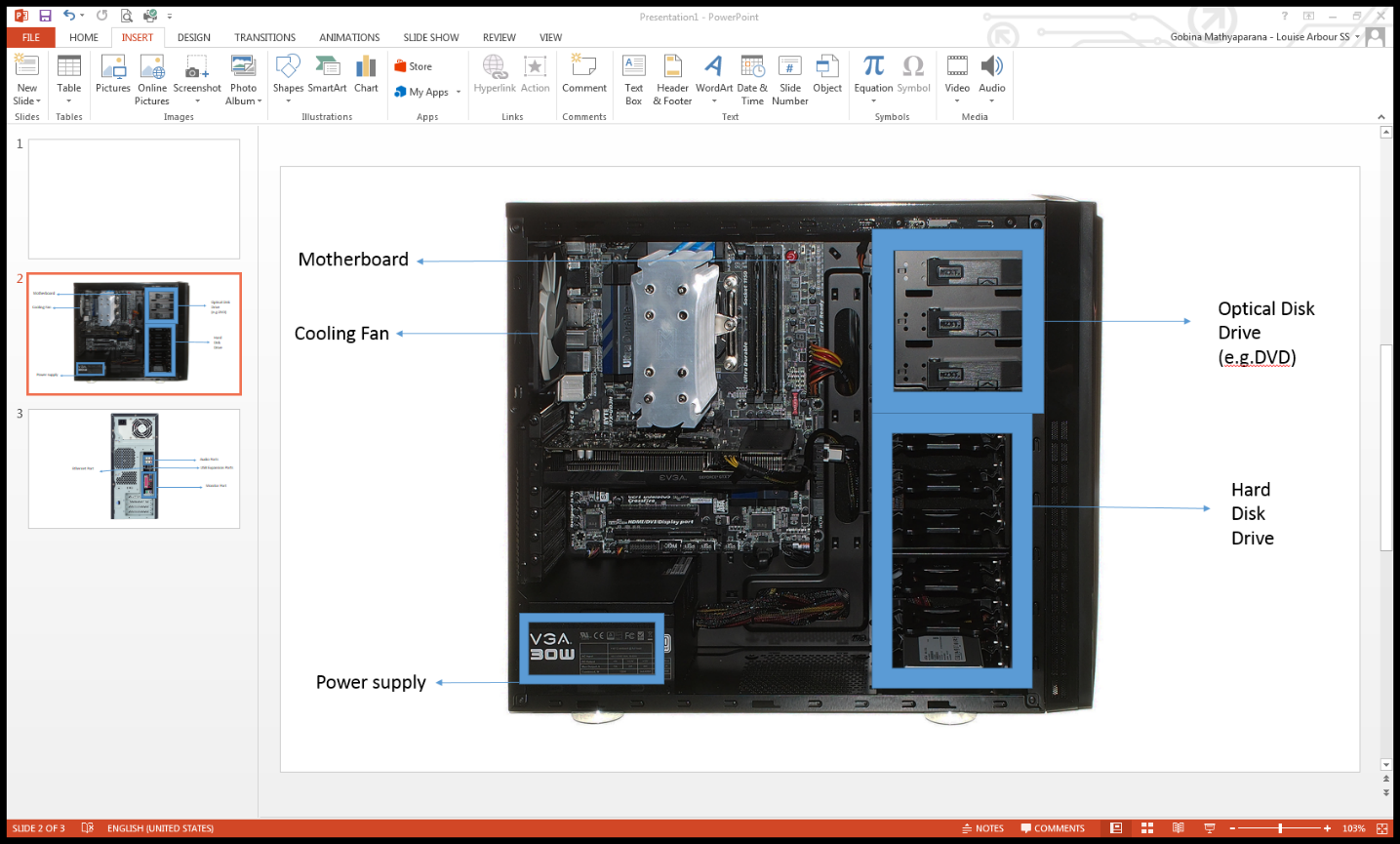
**Level 1: PC Tower Case**

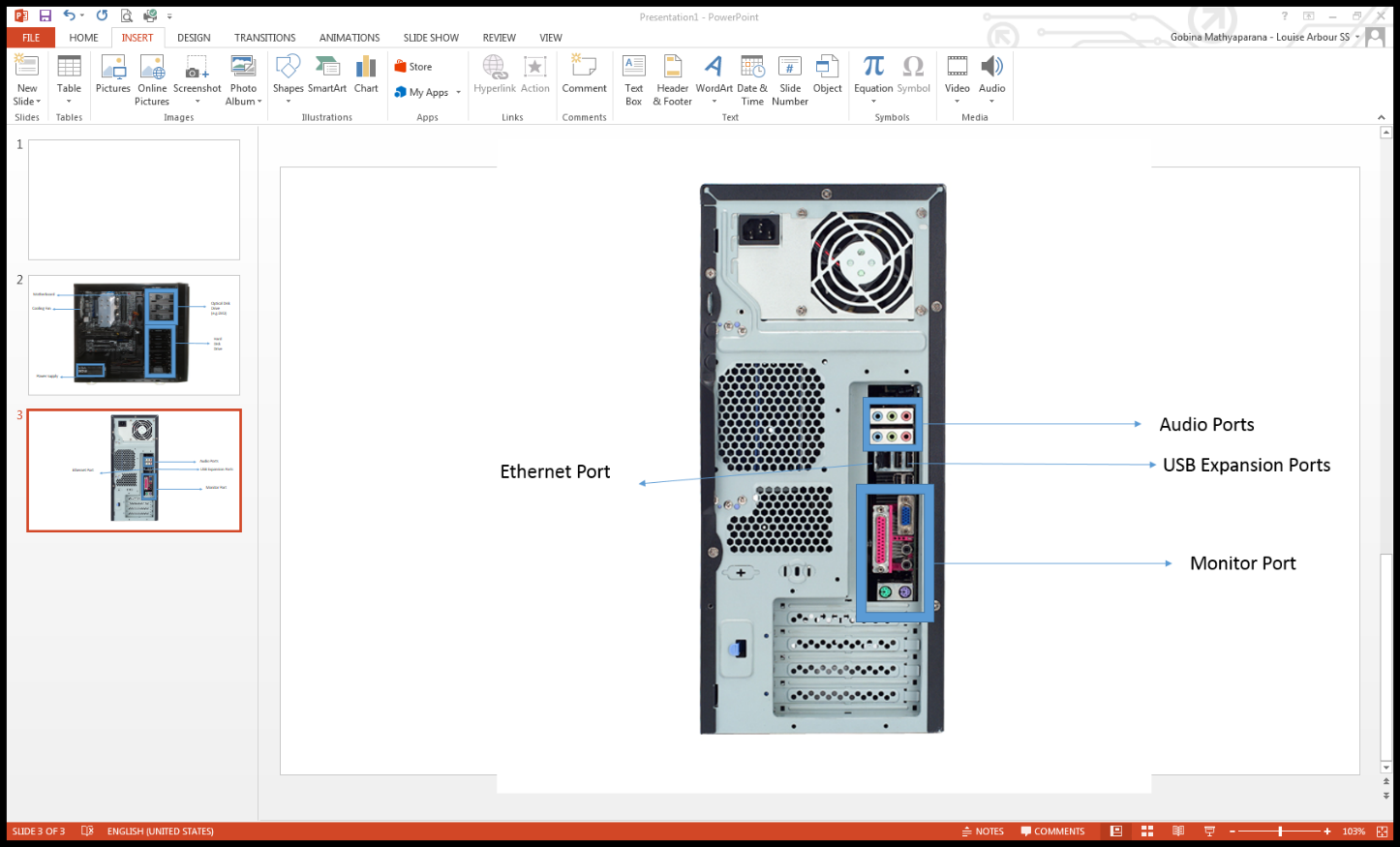
**Outline**

Learn about the internals of a standard PC case by examining physical samples and selecting and labeling images found on-line. Gain deeper knowledge by researching and reporting on specific components.

**Questions**

1. Find one (or more) images that clearly show the internals of a PC Tower Case.   
   (i.e. Google images using keywords “PC Case Internals”)
2. Clearly label the following components (using arrows) on your image of the PC case internals:
   * Motherboard
   * Power Supply
   * Hard Disk Drive
   * Optical Disk Drive (e.g.DVD)
   * USB Expansion Ports
   * Monitor Port
   * Audio Ports
   * Ethernet Port
   * Cooling Fan  
     **Question 1 and 2**





1. Research more in-depth about “Motherboards”. Make notes on the following:
   * What different versions are currently available (speed and capacity)

* **Best Intel Mini-ITX motherboard: Asus ROG Strix Z370-I Gaming**

### Best AMD motherboard: Gigabyte X470 Aorus Gaming 7 Wi-Fi

### Best budget AMD motherboard: MSI X470 Gaming Plus

* + How the component has changed since the 1980’s
* **Released in 1981, the original PC, with its simplicity and openness, set the standard for many computer hardware specifications**
* **The IBM Personal Computer featured the first motherboard as we know it, though IBM called it a "planar."**
* **It housed the computer's CPU and RAM, provided audio as well as many other functions, supplied ports for keyboard and cassette tape, and had expansion slots for add-on cards, as well as a system called a bus to manage these information flows.**

1. Research more in-depth about “Hard Disk Drives”. Make notes on the following:

What different versions are currently available (speed and capacity)

* **Parallel Advanced Technology Attachment (PATA)**
* **Serial ATA (SATA)**
* **Small Computer System Interface (SCSI)**
* **Solid State Drives (SSD)**

How the component has changed since the 1980’s

* **Its storage system was called the IBM 350. RAMAC was big – it required an entire room to operate. The hard disk drive storage system alone was about the size of two refrigerators. Inside were stacked 50 24-inch platters.**
* **IBM made the first commercial hard disk drive-based computer and called it RAMAC – short for “Random Access Method of Accounting And Control.”**
* **2016 marks the 60th anniversary of the venerable Hard Disk Drive (HDD).**
* **While new computers increasingly turn to Solid State Disks (SSDs) for main storage, HDDs remain the champions of low-cost, high-capacity data storage.**

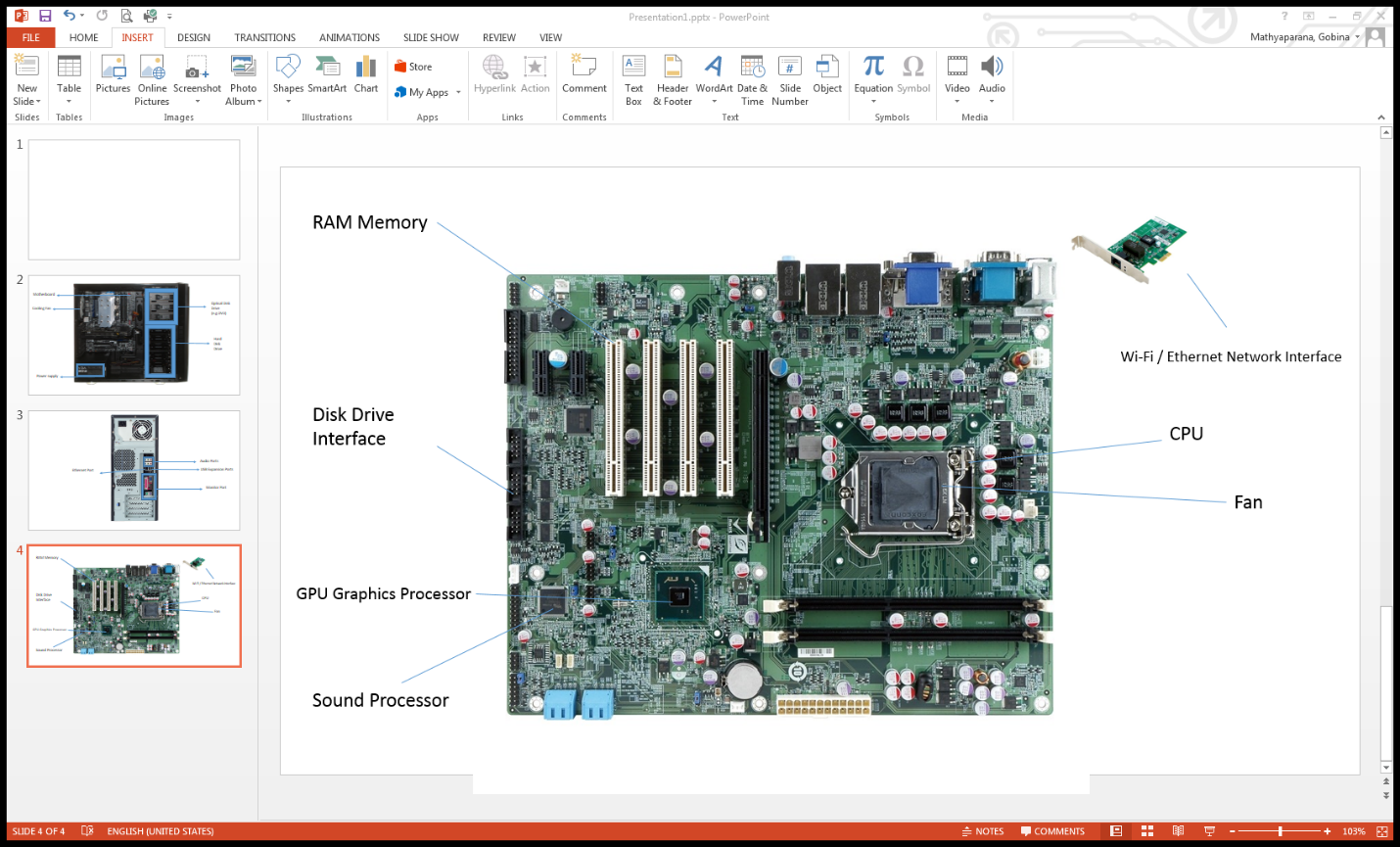
**Level 2: PC Motherboard**

**Outline**

Learn about the structure of a standard PC motherboard by examining physical samples and selecting and labeling images found on-line. Gain deeper knowledge by researching and reporting on specific components.

**Questions**

1. Find one (or more) images that clearly show the layout of a PC Motherboard.   
   (i.e. Google images using keywords “PC Motherboard”)
2. Clearly label the following components (using arrows) on your image of the PC motherboard:
   * CPU (and fan)
   * RAM Memory
   * Disk Drive Interface (IDE or SATA)
   * GPU Graphics Processor (either on-board or Graphics Card)
   * Sound Processor (either on-board or Sound Card)
   * Wi-Fi / Ethernet Network Interface (either on-board or Graphics Card)



1. Research more in-depth about “CPU Processor Chip”. Make notes on the following:

What different versions are currently available (speed and capacity)

* **An Intel Core** i7-8550U **is an 8th-generation chipset.**
* **An**i7-7500U **is from the 7th, the older generation.**

**How the component has changed since the 1980’s**

* **They have a rich and neat history history, dating all the way back to 1971 with the first commercially available microprocessor, the Intel 4004.**
* **As you can imagine and have no doubt seen yourself, since then, technology has improved by leaps and bounds.**

1. Research more in-depth about “RAM Memory”. Make notes on the following:
   * What different versions are currently available (speed and capacity)
   * **Static RAM (SRAM)**
   * **Dynamic RAM (DRAM)**
   * **Synchronous Dynamic RAM (SDRAM)**
   * **Single Data Rate Synchronous Dynamic RAM (SDR SDRAM)**
   * **Double Data Rate Synchronous Dynamic RAM (DDR SDRAM, DDR2, DDR3, DDR4)**

How the component has changed since the 1980’s

* **In July 1953 a core memory expansion was added to the ENIAC.** 
  + **Konrad Zuse completes the Z22, the seventh computer model and the first computer that used magnetic storage memory.**
  + **MIT introduced the Whirlwind machine on March 8, 1955, a revolutionary computer that was the first digital computer with magnetic core RAM**

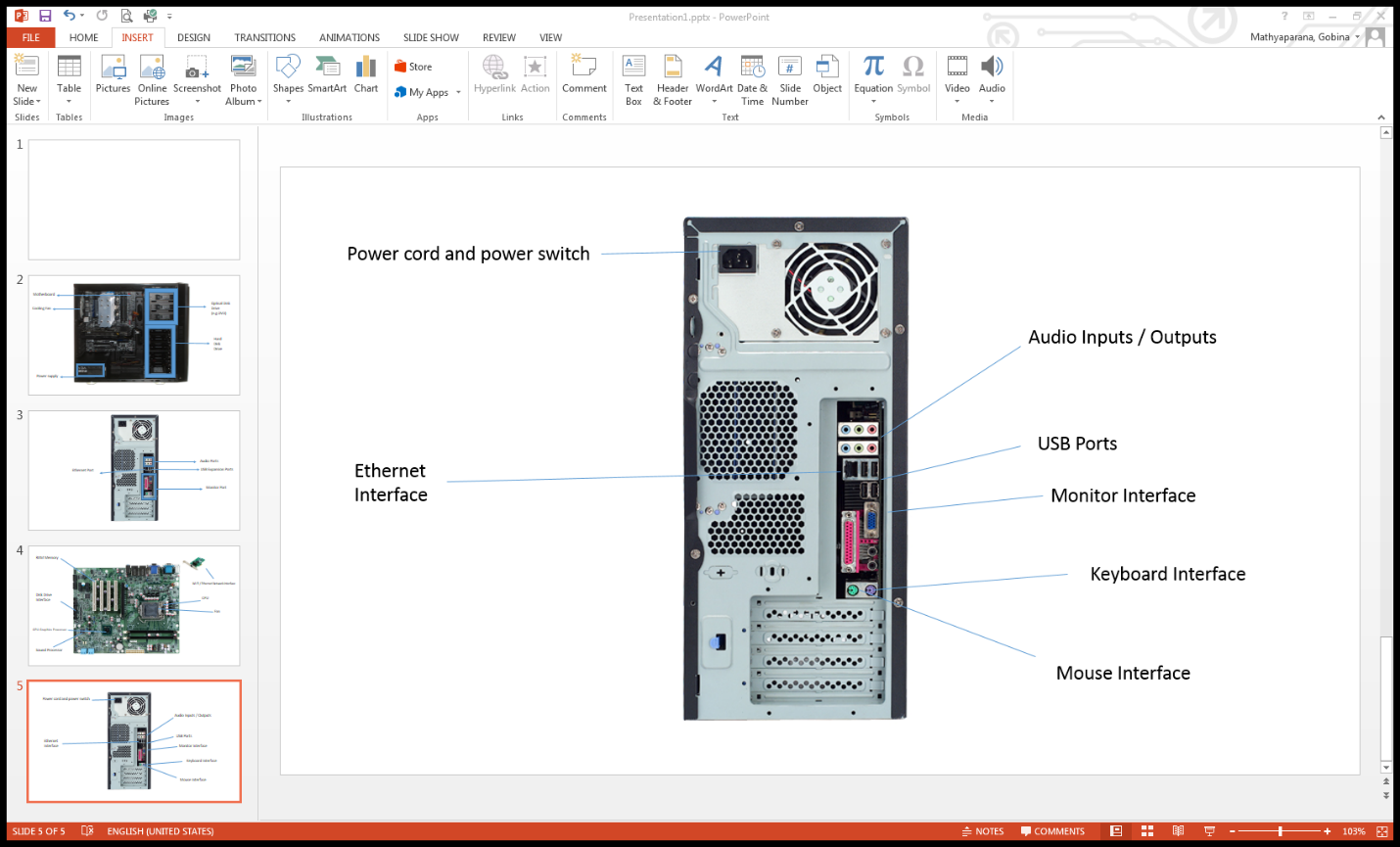
**Level 3: Peripheral Devices**

**Outline**

Learn about how peripheral devices are connected to the back side of a typical PC tower case. Examine physical samples, select and labeling images found on-line and gain deeper knowledge by researching and reporting on specific components.

**Questions**

1. Find one (or more) images that clearly show the layout of the back of a typical PC tower case.   
   (i.e. Google images using keywords “Back Of PC Tower”)
2. Clearly label the following components (using arrows) on your image of the back of a typical PC tower case:
   1. Power cord and power switch
   2. Monitor Interface (VGA or DVI or HDMI)
   3. Mouse Interface (USB or PS/2)
   4. Keyboard Interface (USB or PS/2)
   5. USB Ports
   6. Audio Inputs / Outputs
   7. Ethernet Interface



1. Research more in-depth about “Monitor Technology”. Make notes on the following:
   1. What different versions are currently available (e.g. VGA / DVI, Flat Panel Technology))

|  |  |  |
| --- | --- | --- |
| **https://www.mycablemart.com/help/images/dvi_fa3.gif This is the most common DVI connection found on 99% of cable and satellite boxes.** | **DVI-D** | [**DVI-D Cable**](https://www.mycablemart.com/store/cart.php?m=search_results&catID=53&search=DVI/DVI)**\*** |
| **DVI-I** | [**DVI-D Cable**](https://www.mycablemart.com/store/cart.php?m=search_results&catID=53&search=DVI/DVI)**\*** |
| **DVI-A or VGA** | [**DVI-D to VGA Converter Cable**](https://www.mycablemart.com/store/cart.php?m=product_detail&p=648) |
| **HDMI** | [**DVI-D to HDMI Combo Cable**](https://www.mycablemart.com/store/cart.php?m=product_list&c=61) |

* 1. How the component has changed since the 1980’s (e.g. Display Resolution, Technology)  
     **It has changed from the lower graphics resolution a very high graphics resolution since the 1980’s. Like how the pixels are arranged to see the picture better and how there are more pixels.**

1. Research more in-depth about “External Portable Storage”. Make notes on the following:
   1. Floppy Disks

* **A floppy disk is a magnetic storage medium for computer systems.**
* **The floppy disk is composed of a thin, flexible magnetic disk sealed in a square plastic carrier.**
* **In order to read and write data from a floppy disk, a computer system must have a floppy disk drive (FDD).**
* **A floppy disk is also referred to simply as a floppy.**
* **Since the early days of personal computing, floppy disks were widely used to distribute software, transfer files, and create back-up copies of data.**
* **When hard drives were still very expensive, floppy disks were also used to store the operating system of a computer.**
* **A number of different types of floppy disks have been developed.**
* **The size of the floppy got smaller, and the storage capacity increased.**
* **1990s, other media, including hard disk drives, ZIP drives, optical drives, and USB flash drives, started to replace floppy disks as the primary storage medium.**
  1. CD-ROM / DVD / Recordable CD/DVD
* **Short for Digital Versatile Disc-Recordable, DVD-R is a drive capable of recording once to a disc and reading many times after it has been created.**
* **DVD-R is an approved standard by**[**DVD Forum**](https://www.computerhope.com/jargon/d/dvdforum.htm)**and the drives are capable of recording to**[**DVD-R discs**](https://www.computerhope.com/jargon/d/dvdrdisc.htm)**, also known as "DVD-5" and "DVD-10" discs.**
  1. USB Memory Drives
* **A USB flash drive is a device used for data storage that includes a flash memory and an integrated Universal Serial Bus (USB) interface.**
* **Most USB flash drives are removable and rewritable. Physically, they are small, durable and reliable.**
* **The larger their storage space, the faster they tend to operate.**
* **USB flash drives are mechanically very robust because there are no moving parts.**
* **They derive the power to operate from the device to which they are connected (typically a computer) via the USB port.**
  1. Compact Flash Memory
* **Compact Flash (CF) is a flash memory mass storage device used mainly in portable electronic devices.**
* **The format was specified and the devices were first manufactured by SanDisk in 1994.**
* **Compact Flash became the most successful of the early memory card formats, surpassing Miniature Card and Smart Media.**
  1. Cloud Based Storage
* **Cloud storage is a service model in which data is maintained, managed,**[**backed up**](https://searchdatabackup.techtarget.com/definition/cloud-backup)**remotely and made available to users over a network (typically the**[**Internet**](https://searchwindevelopment.techtarget.com/definition/Internet)**)**
* **. Users generally pay for their cloud data storage on a per-consumption, monthly rate.**
* **Although the per-**[**gigabyte**](https://searchstorage.techtarget.com/definition/gigabyte)**cost has been radically driven down,**[**cloud storage providers**](https://searchstorage.techtarget.com/definition/cloud-storage-provider)**have added operating expenses that can make the technology more expensive than users bargained for.**
* **Cloud security continues to be a concern among users.**
* **Providers have tried to deal with those fears by building security capabilities, such as**[**encryption**](https://searchsecurity.techtarget.com/definition/encryption)**and**[**authentication**](https://searchsecurity.techtarget.com/definition/authentication)**, into their services**