



Clouds

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What it is

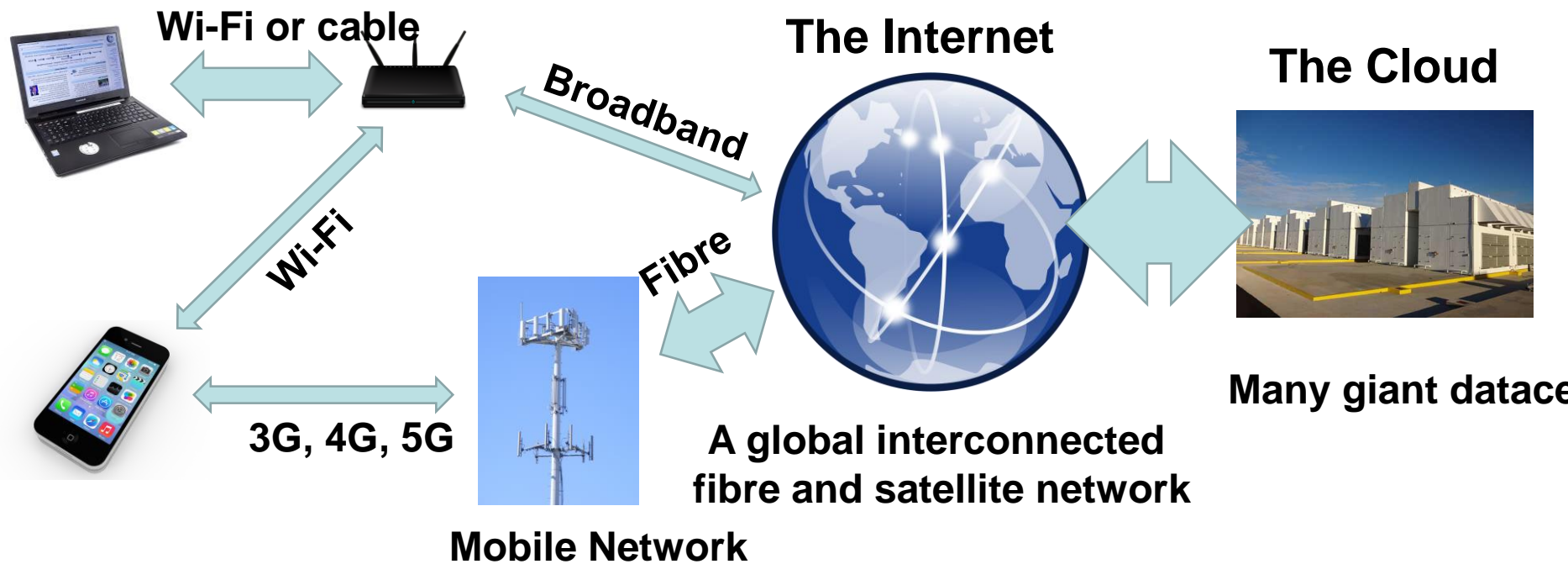
Business

- Storage
- Business applications
- Vast scale
- High security
- Tools to manage it all

Consumer

- Storage
- Online applications, e.g.
 - Word processing
 - Spreadsheets
 - Presentations
- Consumer services, e.g.
 - Email
 - Social media
 - Music, video

Connecting to the Cloud





Google google.com/datacenters

Datacenters

- Tens of thousands of servers per mega datacenter
- More than 500 mega datacenters around the world
- Can easily cost \$1 billion each
- Consume about 3% of the world's electricity (40% more than the UK)
- Each datacenter can easily consume 100MW (~ 40,000 homes)
- Going Green (ish)

Who delivers it

Datacenter owners, revenue

- Amazon (AWS)
 - \$34.6bn in 2019
- Microsoft (Azure)
 - \$18.1bn in 2019
- Google
 - \$8.92bn in 2019
- Facebook
 - Just used by Facebook

Users of Datacenters

- Apple
 - (uses AWS and Google)
- Netflix
 - (uses AWS and local suppliers)
- Spotify
 - (uses Google)
- Nearly everyone else

Consumer orientated businesses

- **Email**
 - Microsoft Outlook and Hotmail, Google Gmail, Apple email
- **More modern communications (Social Media)**
 - Skype, Facetime, Facebook, WhatsApp, Instagram, Twitter
- **Video, TV**
 - Netflix, Britbox, iPlayer, Disney TV, Apple TV+
- **Music**
 - Spotify, BBC Sounds
- **Shops**
 - Amazon, eBay
- and of course **Google Search**
- *Free, Freemium, Subscription*

Why some of it is free

- Lock in
 - keeps you as a customer, giving them:
- Customer data
 - which allows them to target:
- Ads
 - which makes them (lots of) money

The main cloud providers (Amazon, Microsoft) are now \$1 trillion companies (\$1,000,000,000,000). Google and Facebook are not far behind.

What are the cloud services?

- **Apple** – iCloud storage
- **Google** – Google Drive storage plus Google Apps
- **Microsoft** – Onedrive storage plus Microsoft online apps
- **Amazon** – Amazon Drive storage
- **Facebook** – Facebook, WhatsApp, Instagram, no storage

Apple



- Built in to iPhones, iPads and Macs, Windows App
- Cost:
 - 5GB free
 - 50GB for £0.79 a month
 - 200GB for £2.24 a month
 - 2TB for £8.00 a month

Google Drive



- Built in to Android smartphones and tablets, Windows app
- Cost
 - 15GB free
 - 100GB for £1.59 a month
 - 200GB for £2.35 a month
 - 2TB for £8.00 a month

Microsoft OneDrive



- Built in to Windows 10, app on iPhone and Android
- Cost:
 - 5GB free.
 - 100GB for £1.50 a month
 - 1TB for £5.99 a month, or
 - 1TB for £7.99 a month, includes Microsoft Office subscription

Amazon Drive



- Difficult to use, but apps on all platforms
- Amazon Prime members get:
 - 5GB free plus unlimited photo storage with Prime Photos
 - 100GB for £16.99 per year
 - 1TB for £79.99 per year



- Apps for all platforms
- Cost:
 - 2GB free, but limited to 3 devices
 - 2TB £7.99 per month

How to use

- Backup critical data using storage
 - Photos
 - Everything else
- Synchronize (Sync) between devices
- Clouds underpin:
 - Email – pre-Cloud? Not tied tightly to other services
 - Apps – word processing, spreadsheets, presentations
 - Comms, TV, Music, Shops, Search, Social Media

To use, or not to use?

For

- Data backups
- Access data anywhere
- Syncing multiple devices
- Free apps

Against

- Limited bandwidth
- Loss of privacy
- Lock in
- No service guarantee



Questions