Here’s a structured and simple breakdown of the **"Linux"** document tailored for the **CompTIA A+ 220-1102** exam:

**1. General Overview**

**Linux** is an open-source operating system. This means its source code is freely available to view, modify, and redistribute. Unlike Windows or macOS (which are created by one company), Linux is developed and maintained by communities, organizations, and individuals worldwide.

There are many "flavors" of Linux, called **distributions (distros)**—like different styles of the same basic tool. Linux can be used on desktops, servers, smartphones, tablets, and even tiny smart devices like cameras or smart TVs.

**2. Exam Relevance**

For the **CompTIA A+ 220-1102** exam, you need to:

* Understand that **Linux is open-source** and community-driven.
* Be able to recognize **common Linux distributions** like Ubuntu, Fedora, Debian, CentOS, and Arch.
* Know the difference between **standard release** and **rolling release** models.
* Be familiar with Linux as both a **desktop** and **server** OS.
* Recognize that **Linux powers most servers and embedded devices** like IoT systems.

Key Terms:

* **Open-source**: Anyone can access and change the code.
* **Distributions**: Versions of Linux built on core systems like Red Hat, Debian, and SUSE.
* **LTS (Long Term Support)**: Versions with extended support periods (like Ubuntu 22.04).
* **Standard vs. Rolling Release**: Fixed version releases vs. continuous updates.
* **Embedded Systems**: Small devices like smart cameras that often-run Linux.
* **Command Line vs. GUI**: Linux can run with just text commands or a full graphical desktop.

**3. Detailed Breakdown**

**Major Linux Distributions:**

* **Red Hat-based**: Red Hat, Fedora, CentOS
* **Debian-based**: Debian, Ubuntu, Mint
* **SUSE-based**: SUSE, openSUSE

**Open-source Model:**

* You can freely download and modify the code.
* Some companies (like Red Hat and SUSE, Fedora, CentOS) sell support services for Linux subscription base.
  + If you need additional support, you have to figure It out on your own.
  + Or pay somebody to help support it.
    - Like Ubuntu which gives away software for free for no cost.
    - Ongoing support for a yearly fee.
    - If you don’t pay you have no ongoing support.
  + Community-based distros like Debian and Arch rely on forums and groups for help.

**Different Distributions Models:**

* **Standard Release**: Uses versioning to distinguish between updates, Fixed versions like "**Ubuntu 22.04 LTS**" long term support with scheduled support.
  + Even-numbered Ubuntu versions are LTS (supported for ~5 years).
  + Odd-numbered versions are interim (supported for ~9 months).
* **Rolling Release**: Always updated, no version numbers (e.g., Arch Linux).
  + Any new updates or patches its automatically pushed to all those Linux systems (server or desktop).
    - Provides and more secure environment than using a standard release model.
    - It can complicate your change management, overtime because they come out often.
  + Great for up-to-date systems, but harder to manage because updates happen constantly.

**Linux OS versions Usage:**

* Servers
* Desktops
* Smartphones and tablets.
* Internet of things runs on a version of Linux.
* Embedded Devices or small form factor devices.
  + Web based security Camera runs on a version of Linux.
  + Set top box for a TV runs on a version of Linux.
* Even an OS can use Linux which is more like a fork that is based off Linux as well.

So, any manufacturer can take the source code, download it, create it for their device and then embed it into their hardware, if they want to. For this reason, it’s important for you to get comfortable using Linux, at least at the basic level.

**Linux** is only a command line environment and Windows is a graphical User environment.

1. Requires less overhead
2. Less memory
3. Resources

Rather than using a full graphical operating system. Because of these lower requirements Linux is extremely popular.

**Usage Areas:**

* **Desktops**: With a GUI (like Windows), for personal computing.
* **Servers**: Usually command-line only for performance and simplicity.
* **IoT Devices**: Tiny gadgets (smart cams, set-top boxes) often use Linux because it's free and lightweight.

**Real-World Importance:**

* Linux runs **80% of web servers** globally, the other 20% are **Windows Servers**.
* Used in data centers, cloud servers, and by major companies.
* Learning Linux helps with tech support, server work, and cybersecurity roles.

**4. Exam Exclusions**

* You **do not need to know** how to write Linux code or create your own distro.
* **Unix** is mentioned for context but is **not part of the exam objectives**.
* No need to memorize every Linux distro—just be familiar with the major ones and concepts like open-source, LTS, and support models.

Would you like to go over basic Linux commands next or dive into another OS like macOS or Android?