**The Linux File System EXT4**

**EXT4 is the most commonly used file system used today**

* Built to improve on speed and security

Graphical user interface, application, Word

Description automatically generated

**Boot Sector 🡪 Block Group 0 🡪 Block Group n 🡪 Unused sectors**

EXT4 relies on a series of blocks to hold all of the data together

* A large file will be held across multiple blocks

Blocks are grouped into Block Groups

* Everything in Linux is a file so keeping them in blocks allows for quicker lookup

**Data Blocks**

Sectors on disk between 1kb and 64kb each

A file directory can have multiple data blocks associated with it

**Block Group 0**

Special 1024-byte padding at beginning of block group specifically used for OS installation

Graphical user interface, application, Word

Description automatically generated

**Super Block**

Master record for block group

* Number of blocks in group
* Inode counts
* Supported features
* Maintenance information

**Group Descriptors**

* Holds table of bitmap locations
* Holds Inode table
* Group descriptors is not always used
* Also holds data on Directory Counts

**Data & Inode Block Bitmap**

* Holds and tracks the usage of data blocks wit5hin a block group
* Holds and tracks usage of entries in inode table
* Bitmap allows for one bit to be used as a status for something: on/off (1/0)
  + In this case, the status pf the data block and inode entry

**Inode table**

* An inode is like a file, references a single file
  + Date, timestamp, location, block
* Holds metadata for file
* Handles all files or inodes for every block in its block group
  + Lose the table, lose your data