Non-volatile editable memory: bootloaders and computer storage including magnetic memory (magnetic core memory, magnetic tape, floppy disks, hard drives), Semiconductor memory incuding SSD (EPROM/EEPROM/flash memory), optical memory (CD/DVD etc), Master Boot Record (MBR) and FAT32

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Contents

Preface

This is a live document, and is full of gaps, mistakes, typos etc.

Part I

Introduction

Chapter 1

Partitioning using Master Boot Record (MBR)

1.1 Introduction

1.1.1 Intro

Master boot record is start of disk which says how disks sectors aka blocks are laid out.

Chapter 2

Partitioning using Globally Unique IDentifiers (GUID) Partion Table (GPT)

2.1 Introduction

2.1.1 MBR and GPT

Drives are divided into sectors. Each sector contains a fixed number of bytes, eg 4096 bytes.

File systems can be partitioned using either MBR or GPT:

- Master Boot Record (MBR)
- Globally Unique IDentifiers (GUID) Partition Table (GPT)

GPT is newer than MBR.

2.1.2 Boot sectors

The first sector of a disk is the boot sector. This applies to both MBR and GPT.

GPT does not use the boot sector, and it is just kept for compatibility reasons. An EFI system partition is used instead, as discussed later.

Chapter 3

File systems including FAT32 (File Allocation Table)

3.1   Introduction

3.1.1   FAT8

The table is a linked list of cluster locations. at end of linked list is end of file. cluster iss fixed amount of space. bitness is size of values linking to clusters. max size = bitness * cluster size.

No garbage management or inodes.

3.1.2   FAT12

Introduced after FAT8.

3.1.3   FAT32

Introduced after FAT12.

Chapter 4

First-stage boot loaders and motherboard firmware, including BIOS

4.1 Introduction

4.1.1 Introduction

The motherboard has the first-stage boot loader. This if firmware with its own read-only memory.

4.1.2 Basic Input/Output System (BIOS)