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|--|-----------------------------------------------------------------------------------|
| | |
| | 1.1 <div> <div>USB</div> <div>sysfs udev dbus</div> </div> |
| | 1.2 <div> <div>BIOS/UEFI</div> <div>SysVinit upstart</div> </div> |
| | 1.3 <div> <div>/</div> <div>SysVinit systemd SysVinit systemd</div> </div> |

2 Linux

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|---------|---------------------------------------------------------------------------------|
| | |
| | 2.1 <div>Linux</div> |
| | 2.2 <div>GRUB GRUB 2</div> |
| | 2.3 |
| Debian | 2.4 Debian <div> <div>Debian</div> <div>apt Debian</div> </div> |
| RPM YUM | 2.5 RPM YUM <div> <div>RPM YUM</div> <div>RPMdnf Zypper RPM</div> </div> |
| Linux | 2.6 Linux <div> <div>Linux</div> <div>laaS Linux</div> </div> |

3 GNU UNIX

| | |
|-------|------------------------------------------|
| | |
| Linux | 3.1 <div>shell</div> |
| | 3.2 <div>GNU textutils UNIX</div> |

| | 3.3 tar cpio dd |
|--|------------------------------------|
| | 3.4 |
| | 3.5 |
| | 3.6 |
| | 3.7 |
| | 3.8 vi vi Emacs nano vim |

4 Linux

| | 4.1 MBR GPT ext2/ext3/ext4 XFS VFAT exFAT Btrfs |
|--|-----------------------------------------------------------|
| | 4.2 inode |
| | 4.3 UUID systemd |
| | 4.4 |
| | 4.5 suid sgid sticky bit gro |
| | 4.6 / |

| | 4.7 | (FHS) | FHS | Linux | FHS |
|--|------------|-------|-----|-------|-----|

5 Shell shell

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| | |
| shell | 5.1 shell shell PATH Bash |
| | 5.2 Bash shell shebar |
| SQL | 5.3 SQL SQL SQL |

6

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| | |
| X11 | 6.1 X11 l X11 X11 X Window Xorg X |
| | 6.2 GNOME KDE Xfce X11 XDMCP VNC SPICE RDP |
| | 6.3 (AT) |

7

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|--|---------------------------------------|
| | |
| | 7.1 |
| | 7.2 cron system{cron at systemd} |
| | 7.3 LANG=C |

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|-------|-----------------------------------------------------------------------------------------------------------------------|
| | |
| | <div>8.1</div> <div>NTP</div> <div>ntp</div> <div>NTP</div> <div>ntpd</div> <div>chrony</div> <div>pool.ntp.org</div> |
| | <div>8.2</div> <div>rsyslog</div> <div>systemd</div> <div>syslog</div> <div>syslog-ng</div> <div>logrotate</div> |
| (MTA) | <div>8.3 (MTA)</div> <div>MTA</div> <div>MTA</div> <div>postfix</div> <div>sendmail</div> <div>exim4</div> |
| | <div>8.4</div> <div>CUPS</div> <div>LPD</div> <div>CUPS</div> |

9

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| | |
| | <div>9.1</div> <div>TCP/IP</div> <div>IP</div> <div>TCP</div> <div>UDP</div> <div>20</div> <div>21</div> <div>22</div> <div>23</div> <div>25</div> <div>!</div> <div>IPv6</div> <div><</div> <div>tcp</div> <div>ip</div> <div>cidr</div> <div>udp</div> <div>20</div> <div>21</div> <div>22</div> <div>23</div> <div>25</div> <div>53</div> <div>80</div> <div>110</div> <div>123</div> <div>139</div> <div>143</div> <div>161</div> <div>162</div> <div>389</div> <div>443</div> <div>465</div> <div>514</div> <div>636</div> <div>993</div> <div>995</div> <div>udp</div> |
| | <div>9.2</div> <div>Linux</div> <div>TCP/IP</div> <div>wifi</div> <div>systemd-networkd</div> |
| | <div>9.3</div> <div>net-tools</div> <div>iproute2</div> <div>iproute2</div> |
| | <div>9.4</div> <div>DNS</div> <div>DNS</div> <div>DNS</div> <div>DNS</div> <div>systemd-resolved</div> |

10

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|--|-----------------------------------------------------------------------------------------|
| | |
| | <div>10.1</div> <div>nmap</div> <div>netstat</div> <div>suid/sgid</div> <div>sudo</div> |
| | <div>10.2</div> <div>TCP</div> |
| | <div>10.3</div> <div>OpenSSH 2</div> <div>OpenSSH 2</div> <div>GnuPG</div> |

cpu IO

- SQL -----> sql
- IO (raid raid tps)
- tps : IO

IO cpu

- IO
- autocommit IO
- IO/PS IO
- IO
- SQL

IO cpu

- SQL

1.

:
--> --> --> --> ()

2.

- CPU
- I/O I/O
- RAID BBU(Battery Backup Unit)

cpu

- cpu
- cpu OLTP cpu
- IO OLAP

- OLAP
- OLTP cpu 2 4

- RAID (raid 5 raid 10)
- (raid1)(ssd sas sata)

raid raid

- (raid1)
- I/O I/O
- RAID BBU(Battery Backup Unit)

(HBA)

3.

- 1
- 2 (FENCE ipmi ilo idarc)
- 3 (snmp agent)
- 4 EMC2(hp) (hds) IBM OEM hds

4.

Cpu

SWAP

MySQL swap swap 0

IO

- raid no lvm ext4 xfs ssd IO
- Swap (swap)

- 1 CPU CPU
- 1 CPU A B " " A B CPU
- $= ((\frac{\text{CPU}}{2}) + \text{CPU}) \times 4$ i7 $((4 \times 2) + 1) = 9$ 10 3000 6000 TPS
- $2 \times \text{CPU}$ 10000 10
- tps " " " I/O " " I/O "
- iops IO , " "
- KB_read/s (drive expressed)
- KB_wrtn/s (drive expressed)
- KB_read
- KB_wrtn Kilobytes