

# OpenBSD MAC(B) Timestamps

|            |  |
|------------|--|
| M          | Last data Modification                           |
| A          | Last data Access                                 |
| C          | Last file status Change                          |
| B          | Birth: not used (always 0)                       |
| Resolution | 1 nanosecond                                     |
| M/A/C      | M/A/C is updated to current time                 |
| m/a/c      | M/A/C is inherited from m/a/c of source file/dir |
| .          | M/A/C is not modified                            |

| Mount Option     | Description  |
|------------------|--|
| <b>(default)</b> | MAC updates are all performed                                    |
| noatime          | A updates are performed only if M or C is also marked for update |

|   | New File/Dir<br>touch, mkdir | File Read /Execute<br>cat, exec() | Symlink Read/Follow<br>readlink | File Write<br>>, >> | File/Dir Change<br>chmod, chown | New/Delete Hardlink<br>ln, rm | File/Dir Rename<br>mv | Local File Move<br>mv | Local Dir Move<br>mv | Volume File/Dir Move<br>cp | File/Dir Copy (new)<br>cp | File Copy (existing) |
|---|------------------------------|-----------------------------------|---------------------------------|---------------------|---------------------------------|-------------------------------|-----------------------|-----------------------|----------------------|----------------------------|---------------------------|----------------------|
| M | <b>M</b>                     | .                                 | .                               | <b>M</b>            | .                               | .                             | .                     | .                     | <b>M</b>             | <b>m</b>                   | <b>M</b>                  | <b>M</b>             |
| A | <b>A</b>                     | <b>A</b>                          | .                               | .                   | .                               | .                             | .                     | .                     | .                    | <b>a</b>                   | <b>A</b>                  | .                    |
| C | <b>C</b>                     | .                                 | .                               | <b>C</b>            | <b>C</b>                        | <b>C</b>                      | <b>C</b>              | <b>C</b>              | <b>C</b>             | <b>C</b>                   | <b>C</b>                  | <b>C</b>             |

|   | <b>Dir</b><br>Traversal<br>cd | <b>Dir</b><br>Listing<br>ls | <b>Dir:</b> Dir Moved<br>into (Local)<br>mv | <b>Dir:</b> New/Rename Child<br>(File/Dir/Hardlink)<br>touch, mkdir, ln, mv, cp | <b>Dir:</b> Delete Child<br>(File/Dir/Hardlink)<br>rm, mv | <b>Dir:</b> Child<br>Read/Exec/Write/Change<br>cat, readlink, >>... |
|---|-------------------------------|-----------------------------|---|---|---|---|
| M | .                             | .                           | <b>M</b>                                    | <b>M</b>  | <b>M</b>  | .   |
| A | .                             | <b>A</b>                    | <b>A</b>                                    | .   | .   | .   |
| C | .                             | .                           | <b>C</b>                                    | <b>C</b>  | <b>C</b>  | .   |