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DATE: August 23, 1971

SUBJECT: Changes to Directory Format

It is time, once again, to perform significant changes to the
file system. Several impending new facilities demand these modifi-
cations. As a first step in this direction we have gathered together
the changes to directory format which are necessary to implement the
desired facilities. It is felt that the format of the directory can
be modified first and then the various facilities be implemented
individually utilizing the space within the directory format allo-
cated for their use.

The following changes will be made to directory headers:

    1. Add pointer to initial ACLs.

    ~~2. Add retain time limit.~~

    3. Add accounting information for offline segments.

The following changes will be made to directory entries:

    1. Keep date time dumped and device address for backup copies.

    2. Keep date time offline and device address for offline
        segments.

    3. Add ring brackets and extended ring brackets.

    4. Simplify ACL entries.

    5. Change to variable length file maps.

    6. Add backup indicator.

    7. "delete" attribute bit

    8. rename copysw

    9. and time of update of p-t product

    10. UCT inurue

Description of Changes

Directory Headers:

1. The directory header must contain relative pointers to the
various initial ACLs associated with the directory. There will
be eight (one for each ring) initial ACLs for directory seg-
ments and eight initial ACLs for non-directory segments within the
given directory.

2. It is proposed that when segments are deleted ~~they not~~ actually
be removed from the directory. For such a facility we must
provide a time limit for which such pseudo-deleted segments
should be retained before actually being deleted.

3. It will be necessary to keep some accounting information about
offline segments. This would probably be in the form of some
offline device usage-time product. Under the current scheme
of accounting for secondary storage usage this information
would be kept in the directory header. However, if changes
are made to secondary storage accounting, accounting for off-
line storage will be modified also.

Directory Entries:

1. In order to make retrieval easier, the location, on tape,
of the most recent backup copies of a segment should be kept
in the branch for that segment. This location would specify
the tape number and possibly the position on the tape.
For extra reliability it may be useful to keep track of the last
two backup copies or perhaps the last two copies on different
tapes.

2. For offline segments it is necessary to know the offline add-
ress of the segment, which, for tapes, would be a tape number
and possibly position on the tape, and for convenience the
date time placed offline.

3. With only one set of ring brackets per segment, the standard and extended ring brackets would be placed in the branch.

4. ACL entries would simply contain a user id and the standard and extended access modes.

5. In order to reduce the space taken up by file maps and make 256K segments reasonable to implement, variable length file maps would be introduced.

6. For those few super sophisticated users who may wish not to have some of their segments backed up, an indicator so not to back up this segment will be provided.

Comments on any of the above listed items are solicited. Also any other suggestions as to directory format changes are welcome. Comments and suggestions should be returned quickly.

Remove Quotas
Insert Account I'Ds
per branch