Identification

Archive Command
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Purpose

The archive command allows a user to have an archive segment
in a designated directory. An archive segment is the
concatenation of several segments, with each prefaced
by a header. The user references individual segments
in an archive segment only with the archive command.
Individual segments in the archive segment may be deleted,
extracted and replaced (or newly placed) in the archive
segment. Following are two possible uses of an archive
segment:

a) To combine segments which are not frequently used
    so that the single archive file occupies fewer
    tracks than the many smaller segments.

b) To combine segments in order to reduce the number
    of directory entries, thus facilitating movement
    of a set of segments.

Usage

        archive key name (seg1...segN)

name is the name of the archive segment and may be a
pathname relative to the root or to the working directory.
each segment of the list, seg1...segN is the entry name
of a segment in the archive segment name.

SegI (a member of the list seg1...segN) may not be a pathname
and is assumed to be in the same directory (or to be placed
in the same directory) as name.

key indicates what action archive should take and may
be one of d, r, or x.

Key=d: delete segments seg1...segN from the archive segment
name. This involves creating a new archive segment which
does not contain seg1...segN and deleting the old archive
segment.

Key=r: replace old segments seg1...segN from the archive
segment name by the new segments seg1...segN. If segI
does not exist in the archive segment name, segI is added
at the end of the archive segment. If name does not exist,
the archive segment name is created and seg1...segN are
combined into the newly created archive segment.

Key=x: extract segments seq1...seqN from the archive
segment name and copy them into the directory containing
name. The segment name is unchanged. The copies are
named seq1...seqN and any old copies are deleted (providing
the user has appropriate access to the directory).

Errors

Six messages are typed to the user for the following reasons.

1) "key is not one of (d,r,x)" if the key is wrong.

2) "segment name doesn't exist" if the user tries to extract or
    delete from an archive segment which is not found.

3) "segment name is not an archive segment" if the segment
    name is found but does not have the characteristics of an
    archive segment. (See implementation below.)

4) "seqI not found" if seqI isn't found either in the archive
    segment (key="x" or "d") or in the directory (key="r").

5) "Archive segment name is not created" if the key is "r",
    if the segment name doesn't already exist, and if none
    of the segments seq1...seqN are found.

6) "Cannot move the segment seqname" if a completed segment
    cannot be placed in the designated segment. This may
    occur because a non-empty entry of the same name already
    exists in the designated directory and cannot be deleted.
    Alternatively, it may occur because such an entry does
    not exist and the user does not have access which allows
    him to create the necessary entry. If the user is
    extracting segments, archive continues to the next.
    Otherwise, archive returns to command level after reporting
    the failure.

Discussion

Each entry in the archive segment consists of a header
followed by a copy of the segment. Each header is 25
ASCII words long. The format is as follows:

BT NL NL NL -1st word

BRS BRS BRS BRS -2nd word

CC -char count in ascii of the name of the archived segment

name -(52 characters)

Time -including time zone, that the segment was archived

BBBBBBB -(7 chars) the ascii value of the bit count of
          the segment

BRS BRS BRS BRS

NL NL NL NL

Implementation

Delete: A call to working_segs$init (BY.2.11) creates in
the process directory a segment with a unique name, and
enables the modes "read", "write" and "append". Archive
copies headers and segments that are not to be deleted
from the archive segment name into the new archive segment.

Finally working segs$finish is called to move the segment
it created to the target directory as name and delete
the process directory branch. The target directory is
the directory specified by name, or if none appears, it
is the working directory.

Replace: Like delete, replace copies into a new archive
segment created by working_segs$init, changing the segments
that are to be replaced or adding a segment if it does
not currently exist in the archive. At the end working_
segs$finish is called.

Extract: For each segment segI that is to be extracted
from the archive segment name, a call to working_segs$init
is made and a segment is created with a temporary name
consisting of a unique character string. SegI from the
archive segment is then moved to the newly created segment.
SegI is also left in the archive segment. A call to
working_segs$finish moves the new segment to the target
directory and deletes the process directory branch.