

Roach

TO: Distribution
FROM: Gary C. Dixon
DATE: May 20, 1974
SUBJECT: ANSI Standard Tape DIM Project Status

I. TASK STATUS

tapeio_ (Frank Canali)

Frank has now completed most of the coding for the ring 4 interfaces of tapeio_, and has typed this code in. Debugging of this code will wait until code for the ring 1 interfaces is complete, and until a version of the Tape Mount Package has been modified to use these interfaces. The package will then be surrounded by a special DIM command which can evoke all possible operation sequences of tapeio_, and tapeio_ and the modified Tape Mount Package will be debugged as a whole.

Frank's work has been delayed by three weeks, first because of maintenance work on APL/TSO, and now because of his attendance at OS/370 VS-II-2 classes given for PDO members by IBM. These delays have pushed his expected completion date for tapeio_ back to the end of June (and perhaps later if problems arise in the debugging, or if more delays appear on the horizon). It is clear that these delays must be held to a minimum if Version 2 of the ANSI DIM is to be completed by the end of July.

ANSI DIM - Version 2 (Janice Phillipps, Ross Klinger)

As reported last month, the work on Version 1 of the ANSI Standard Tape DIM is complete. This initial version performs all of the attaching/detaching, input/output, file-positioning, labelling and order functions of the ANSI DIM, under the following restrictions: 1) I/O is performed via synchronous techniques, only; 2) multi-volume files and multi-file multi-volume tape sets are not supported; 3) tape files recorded in binary, or in a character code other than ASCII are not supported; 4) only U-format logical records are supported, not F-, D-, or S-formats; 5) only ios_ interfaces are supported, not lox_ interfaces; 6) VOL1, HDR1, HDR2, EOF1, and EOF2 labels must be present in order to read files from a tape; 7) reading and writing of user file labels (UHLA UTLA) are not supported; 9)

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IBM tape formats are not supported.

Work is now underway on Version 2 of the ANSI DIM, in which some of these restrictions will be removed. In particular, the ANSI DIM will support all ANSI logical record formats, ANSI block prefixes will be skipped on input, and I/O will be performed asynchronously through `tapeio_`. In addition, a new `ibm_tape_` interface to the ANSI DIM's code will support all OS/370 tape formats, including F-, FB-, FBS-, V-, VB-, VBS-, and U-formats.

Development of the new version entails merging the Version 1 ANSI DIM code with Ross Klinger's `ansi_trec_io_` and `ibm_trec_io_` modules which block(de-block) logical records into physical blocks which are output(input) by `tapeio_`. Modifications of the Version 1 ANSI DIM support the new record format options, perform tape label I/O through special entry points in `ansi_trec_io_` or `ibm_trec_io_`, perform order requests through `tapeio_`, and provide a new attachment entry point for the IBM DIM.

Simulators have been written for both `tapeio_` and for the version of the Tape Mount Package which will call `tapeio_`. These simulators allow us to debug code in the ANSI/IBM DIMs before the simulated packages are ready for installation, thus decoupling our debugging efforts from theirs. Also, the process of simulating these packages has brought forth some minor deficiencies in their interfaces. Corrections for the deficiencies have been incorporated into the work on these two packages, thus avoiding problems which might not have been discovered until after their installation. We judge the advantages of decoupled debugging of three complex subsystems, plus the checkout of information flow through the new interfaces, to outweigh the small costs of creating the simulators.

Development and checkout of Version 2 are underway simultaneously. The information needed by `ansi_trec_io_` has been added to the ANSI DIM's stream data block; the attach/detach and volume label handling code has been modified to call `ansi_trec_io_`; `ansi_trec_io_` and `ibm_trec_io_` have been modified for use by Jan's `trec_ctlr_` and `VOL1_labeler_`; the simulators have been written; the attachment mode parsing code extended; a combined table of new error codes created; and the attachment process is nearly debugged. The next step will be the checkout of files read and written in all ANSI record formats, and the checkout of error recovery procedures. Following that will come: the conversion of the order handling code to call `tapeio_`; the implementation of the IBM tape interface; and the checkout of IBM tape record formats.

In conjunction with error recovery, Ross Klinger has identified all possible types of errors (we hope) which can be returned through `tapeio_` from the hardware tape handlers, and has devised basic strategies for handling each type of error. The

strategies are implemented by a new module, `trec_error_handler_`.

The process of devising error handling procedures pointed out the lack of any means of reporting errors to the operator for his correction, or of logging non-recoverable (and perhaps recoverable) tape and hardware errors. A new `trm_error_log` entry will be provided in a subsequent version of the Tape Mount Package to perform these error reporting and logging functions. The entry will allow the DIM to wait until the operator has corrected a recoverable MPC or device attention error before continuing with normal processing.

tape_in/tape_out command (Ross Klinger)

Work on the `tape_in/tape_out` command has been delayed for three reasons: 1) work on the ANSI DIM has required Ross' full attention; 2) lack of information on the capabilities of `vfile_` (particularly, its ability to perform record I/O on unstructured files) have delayed our decision on how best to access files in the Storage System; and 3) the `reduction_compiler` and its associated procedures, which `tape_in/tape_out` uses to process the tape control file, has been in a state of flux as last minute changes were made to clean up their operation. Now, as work on the ANSI DIM is tapering off and the `reduction_compiler` is now stabilized, Ross will resume work on `tape_in/tape_out`. Until more information is available on the use of `vfile_`, we have elected to access files in the storage system via the old `file_DIM`. This will restrict `tape_in/tape_out` to processing only unstructured files. We hope to remove this restriction sometime in the future, if and when the capabilities of `vfile_` are published.

Project Coordination (Gary Dixon)

Three topics of interest have arisen in the area of project coordination. First, it appears that the user interfaces to the ANSI and IBM DIMs will be documented in the MPM, the DIM's program logic will be documented in the User Ring I/O PLM, and `tapeio_` will be documented in the Supervisor I/O PLM. Discussions are underway on how this documentation will be incorporated into the MPM and PLMs.

Second, Honeywell is showing a strong interest in using the ANSI and IBM DIMs to provide support for ANSI and IBM tapes on the official Multics System. Plans are underway for testing of the DIMs by Honeywell, as work progresses.

Third, an MTB describing the features and restrictions of each version of the ANSI and IBM DIMs is nearing completion. It should be submitted for publication within the next week.

TASK DESCRIPTION

ANSI DIM:	PERSONNEL	SIARI	FINISH	M-W	CHANGES-SIAIUS
temporarily modify ANSI attach/detach code to perform functions without switchable gate environment	Phillipps	04/08/74	04/11/74		Done
tapeio_simulator: use sync_tapeio_ to simulate operation of tapeio	Klinger Phillipps	04/25/74 04/25/74	03/03/74 03/03/74	1.5 1.5	Coding Done; debugging as we go along
trm_ (Tape Mount Package) simulator: simulate mount, mount_check, dismount, & error_log entries; call tapeio_sattach to create control seg	Phillipps	05/14/74	05/16/74		Coding done. mount and mount_check entries checked out.
ANSI DIM: create routine to parse attachment options for all tape record formats	Phillipps	05/09/74	05/13/74		Done
ANSI DIM: merge attach/detach/order code with logical record blocking/read-write code	Phillipps Klinger	04/24/74 04/24/74	05/10/74 05/14/74	4	Coding done. Checkout underway
ANSI DIM: convert code supporting attach/detach/volume labelling to call label entries in ansi_trec_io_	Phillipps	05/06/74	05/09/74	.8	Coding done. Checkout underway
ANSI DIM: convert code supporting order requests to use tapeio_	Phillipps	05/13/74	05/17/74	1	Underway
ANSI DIM: change attach/detach/volume labelling code to do order requests through tapeio_	Phillipps	06/24/74	07/12/74	3	Done. Uses trm_simulator.

PROJECT ANSI Standard Tape DIM AREA ANSI DIM: Version 2

TASK DESCRIPTION	PERSONNEL	SIARI	FINISH	M-M	CHANGES-SIARIUS
rec_error_handler: Identify all possible tape errors; implement strategies for handling them	Klinger	05/13/74	05/17/74	.8	Done
ANSI DIM: create an error_table containing new codes used by ANSI DIM	Phillipps Klinger	05/17/74	05/17/74	.1	Done
ANSI DIM: checkout all features of Version 2 DIM, using simulators; test all record formats	Phillipps Klinger	05/13/74	06/03/74	1.5	Underway
IBM DIM: extend code in ANSI DIM to support IBM OS/370 tape label and data formats; provide new user interface, lbn_tape, to this DIM	Phillipps	05/20/74	05/24/74	.5	
ANSI/IBM DIMs: when version of trm_ which uses tapeio_ is installed, test DIMs without use of simulators	Phillipps Klinger (Canali) (Capps) (Dixon)	07/15/74	07/19/74	1	
ANSI/IBM DIMs: reduce number of temp segments used from 3 to 1 per tape drive	Phillipps	07/22/74	07/26/74	1	

PROJECT ANSI Standard Tape DIM AREA Asynchronous Tape I/O

TASK DESCRIPTION	PERSONNEL	SIARI	FINISH	M-M	CHANGES-STATUS
tapeio_ : design asynchronous tape I/O interface for ANSI DIM	Canali	12/25/73	01/14/74	1.5	Design Review complete *
tapeio_ : code subroutine	Canali	03/13/74	05/03/74	4	Ring 4 interfaces almost coded *
trm_ (tape mount package): modify to call tapeio_'s ring 1 interfaces	Canali	05/06/74	05/10/74	1	*
tapeio_ : debug ring 4 and ring 1 interfaces, and trm_ mods	Canali	05/13/74	05/31/74	3	*
tapeio_ : PLM documentation	Canali	06/03/74	06/30/74	3	*

PROJECT _____ ANSI Standard Tape DIM _____ AREA _____ ANSI/IBM DIM Extensions _____

TASK DESCRIPTION	PERSONNEL	START	FINISH	M-H	CHANGES-SIAIUS
ANSI/IBM DIMS: convert to lox_ interfaces					
lox_ support use of lox_ versions of ANSI/IBM DIMS thru lox					
ANSI/IBM DIMS: support multi-volume files					
trm_ provide remount entrypoint to support ANSI/IBM multi-volume files					
ANSI/IBM DIMS: support reading & writing of user labels					
ANSI/IBM DIMS: allow attach modes to override (or specify missing) HDR2 label information					
IBM DIM: support non-labelled tapes					must be able to supply missing label information thru attachment modes
IBM DIM: support DOS tape formats					must be able to supply missing HDR2 label information thru attachment modes
ANSI/IBM DIMS: support processing of binary data or data in character code different from code used in labels					
ANSI DIM: support reading & writing of ANCI label headers					

TASK DESCRIPTION	PERSONNEL	START	FINISH	M-W	CHANGES-STATUS
ANSI DIM: provide MPH documentation	Phillipps Klinger				
IBM DIM: provide MPH documentation	Klinger Phillipps				
ANSI/IBM DIMS: provide PLM documentation for DIMS	Klinger Phillipps				
tapeio_: provide PLM documentation	Canall	05/03/74	05/30/74	3	

PROJECT ANSI Standard Tape DIM _____ AREA _____ Interim Tape I/O Command _____

TASK DESCRIPTION	PERSONNEL	SIARI	FINISH	M-M	CHANGES-SIAIUS
Design phase: extension of ostape to a general tape I/O command.	Klinger	02/07/74	02/15/74	1.4	Done
		02/07/74	02/20/74	2.0	
Coding phase: general tape I/O command.	Klinger	02/18/74	03/01/74	2.0	Done
		02/21/74	03/14/74	3.1	
Testing phase: general tape I/O command.	Klinger	03/04/74	03/15/74	2.0	Done: reads and writes multi-file volumes in sequential order in all formats
		04/01/74	04/12/74	2.0	
Implementation Step I: storage system to using vfile; absolute file positioning	Klinger	04/22/74	05/01/74	1.6	delayed by work on ANSI DIM; Storage System I/O performed with file
		05/17/74	05/24/74		

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