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Enhancements to $TAPE

$TAPE V7.0A has been repackaged to include two new tape controllers and several enhancements. Although the external version of $TAPE remains "V7.0A", the new components are distinguished from earlier versions by the title "V7.0C" in the P.$TAPE library.

The new tape controllers are:-

- A new controller is available for the AHA-1510A SCSI host adapter card. This controller, which supports both "filemark" and "no filemark" modes, is only available with the TF $TAPE product. When using Global Configurator to add the controller, enter "AIC6360" to the TAPE CONTROLLER prompt.

The AIC6360 controller supports a single tape drive attached to an Adaptec AHA-1510A SCSI host adapter. Note that other SCSI devices attached to this card will not work after this controller has been loaded, and it must not be used on Global System Manager (MS-DOS) configurations where an ASPI manager has been configured to control the card.

In order to use Global Configurator to add an AIC6360 controller to a configuration file, the A.J5 or A.JW action file must be dated 08/06/95, or later. Note the A.J5 and A.JW files are not distributed with $TAPE but are supplied on a separate diskette when you order an AHA-1510A card from our Hardware Department. These files are also available on the BBS.

When Global Configurator is used to add or amend an AIC6360 controller, the following configuration-specific prompts will appear:-

```
Drive SCSI ID                          (  6):
Base port address                      (#0340):
Interrupt level                        ( 11):
Card SCSI ID                    (  7)
No filemark mode required?             (N):
Tape buffer length                     (16384):
```

The SCSI ID should match the jumper (or switch) settings on the tape drive.

The base port address is configured by a jumper on the card. The card occupies 20 (hex) addresses in the I/O address space. The AIC6360 controller supports both configurable port addresses, i.e. #0340

(default with jumper removed) and #0140 (alternate with jumper installed). Please read the Hardware Technical Notes supplied with the card for further information.

The interrupt level is configured by a set of jumpers on the card. The AIC6360 controller supports all 4 configurable interrupt levels, i.e. 9, 10, 11 and 12, although IRQ-9 is not recommended. Please read the Hardware Technical Notes supplied with the card for further information.

The card SCSI ID is not configurable since it is fixed on the AHA-1510A card.

The "no filemark" mode allows the controller to read $TAPE tapes saved on a Global System Manager (Unix) configuration, and to create tapes which can be read by the Global System Manager (Unix) $TAPE controller.

The default tape buffer length of 16384 should be sufficient for most purposes. If this value is changed it must be a multiple of the tape block size (512 for smaller QIC drives (60/125/150/250Mb), 1024 for Exabyte, DAT and larger QIC drives (320/525/1000Mb)), and must be less than 32768. Note that small values (e.g. 1024) will prevent the tape from streaming.

- The Tandberg TDC-3660 150Mb/250Mb SCSI QIC tape drive is now supported by the standard $TAPE SCSI controllers. This tape drive is only supported with the TF $TAPE product;

- The tape controller, first described in Global Technical Bulletin GT725, that interfaces to the Adaptec hardware using the ASPI.SYS family of MS-DOS ASPI device managers is now fully supported. This new controller, which supports both "file mark" and "no file mark" modes, allows SCSI tape drives to be used by $TAPE when Global System Manager is running under Microsoft Windows. This driver is available for both the TE and TF $TAPE products.

This option is only available for Global System Manager (MS-DOS) configurations since it requires the services of an ASPI manager. The ASPI manager supports the ASPI interface for a particular host adapter, i.e. it hides the details of the host adapter hardware. Adaptec Inc. supply ASPI managers for the entire range of host adapters which are loaded on MS-DOS systems as standard device drivers. For example, ASPI4DOS.SYS supports the AHA-1540/1542 and AHA-1640 cards. The ASPI controller converts each $TAPE command into a sequence of SCSI operations which are sent to the drive via an ASPI request block.

In order to use Global Configurator to add an ASPI controller to a configuration file; the A.JW action file must be dated 08/06/95, or later.

When Global Configurator is used to add or amend an ASPI controller, the following configuration-specific prompts will appear:-

Drive SCSI ID	(6):
Host adapter number	(0):
No filemark mode required	(N):
Tape buffer length	(16384):

The SCSI ID should match the jumper (or switch) settings on the tape drive.

The host adapter number is a unique number specifying which SCSI host adapter the tape drive is connected to and is set by the ASPI manager. Each host adapter recognised by the ASPI manager is numbered sequentially, starting at 0. Typically, there will only be one host adapter in the machine so the default value of 0 will usually be sufficient.

No filemark mode allows the controller to read $TAPE tapes saved on a Global System Manager (Unix) configuration, and to create tapes which can be read by the Global System Manager (Unix) $TAPE controller.

The default tape buffer length of 16384 should be sufficient for most purposes. If this value is changed it must be a multiple of the tape block size (512 for smaller QIC drives (60/125/150/250Mb), 1024 for Exabyte, DAT and larger QIC drives (320/525/1000Mb)), and must be less than 32768. Note that small values (e.g. 1024) will prevent the tape from streaming.

The following fixes and enhancements are included:-

- The problem that caused a PGM CHK 11 to occur when saving or listing a sub-volume larger than 999,999,999 bytes has been fixed;

- The SCSI controller has been enhanced to handle more than 64Kb-1 blocks of data during saves and restores. The limitation of 64Kb-1 blocks restricted the size of tapes to (1Gb - 16Kb = 1048560Kb) when using the standard block size of 16Kb (see Global Technical Bulletin GT650);

- The problem that caused a STOP 13401 to occur if the time is past 99:59 hours has been fixed;

- The problem that caused an EXIT 803 to occur when saving large units in diagnostics mode has been fixed;

- The problem that caused a PGM CHK-11 at 7A98 on save operations and PGM CHK-11 at 7C3C on restore operations when using a hard-disk volume format with a track size of 32Kb (e.g. P259Z and T259Z) has been fixed. A "tape buffer size" of 32Kb (i.e. 32768 NOT 32000) is modified to 16Kb (i.e. 16384 NOT 16000) automatically by $TAPE (see Global Technical Bulletin GT650);

- All lower-case replies to "Y/N prompts" are now converted to upper-case letters;

- Earlier versions of $TAPE formed the name of the tape controller using the Machine Family Code (i.e "J5" for Global System Manager (BOS); "JW" for Global System Manager (MS-DOS and Windows) and Global System Manager (Novell NetWare)). For most controllers, two versions were required in the P.$TAPE library (i.e one version named "J5CT*nn*"; the other named "JWCT*nn*"). The requirement for duplicate versions of J5CTnn/JWCTnn controllers has been removed - the routine in $TAPE that loads the tape controller specified in the configuration file automatically loads the "J5" version on Global System Manager (MS-DOS and Windows) and Global System Manager (Novell NetWare) configurations;

- Earlier versions of $TAPE included two versions of the SCSI ADAPTEC/AHA-TAPE tape controller: A "standard Global System Manager (BOS) version" that writes filemarks to the tape during a save and expects file marks to be present on the save during a scan or restore; and a "no filemark" controller that neither writes filemarks nor expects filemarks to be present on the tape. The "no filemark" version was produced to provide compatibility with the Global System Manager (Unix) tape controller that cannot write explicit filemarks to the tape. The two Global System Manager (BOS) tape controllers have been merged to form a single version of the controller. TACUS continues to be used to select between "filemark" mode (the default) and "no filemark" mode temporarily (the TACUS changes are lost when Global System Manager is reloaded). However, a future version of =.NNNN will allow the change to be applied permanently to the configuration file.

  Important note: The version of TACUS supplied with the "V7.0C" P.$TAPE library is incompatible with earlier versions of TACUS, and should only be used with the V7.0C P.$TAPE library. If you have installed $TAPE V7.0C and you wish to use TACUS, you must use the version supplied with $TAPE V7.0C. Note that TACUS is not installed as part of the $TAPE installation - it must be copied from the TEA or TFA diskette;

- TACUS has been modified to allow it to be used under Job Management.

The following tape controller cards and tape drives are supported by $TAPE on Global System Manager (BOS) configurations (this table replaces the information contained in Appendix D of the Global Tape 7.0 Manual):-

Name	*Controller card*	*Tape drive*	*Notes*
CD-TAPE	Everex QIC-02 ISA bus	Stream/60	See note-3
	Everex QIC-02 ISA bus	Stream/125	

		See note-3	
	Everex QIC-02 ISA bus	Stream/150	
		See note-3	
CD-TAPE	Everex QIC-02 MCA bus	Stream/60	See note-3
	Everex QIC-02 MCA bus	Stream/125	
		See note-3	
	Everex QIC-02 MCA bus	Stream/150	
		See note-3	
CD-TAPE	Wangtek QIC-02 ISA bus	Wangtek 60Mb	
	Wangtek QIC-02 ISA bus	Wangtek 120Mb	
	Wangtek QIC-02 ISA bus	Wangtek 150Mb	
CD-TAPE	Wangtek QIC-02 MCA bus	Wangtek 60Mb	
	Wangtek QIC-02 MCA bus	Wangtek 120Mb	
	Wangtek QIC-02 MCA bus	Wangtek 150Mb	
VIPER	Viper VP-402 ISA bus	Archive Viper 2150L	See note-1
ADAPTEC	Adaptec AHA-154*nx* (ISA)	Archive Viper 2060S	
or	Adaptec AHA-154*nx* (ISA)	Archive Viper 2125S	
AHA-TAPE	Adaptec AHA-154*nx* (ISA)	Archive Viper 2150S	
	Adaptec AHA-154*nx* (ISA)	Wangtek 5099ES	
	Adaptec AHA-154*nx* (ISA)	Wangtek 5125ES	
	Adaptec AHA-154*nx* (ISA)	Wangtek 5150ES	
	Adaptec AHA-154*nx* (ISA)	Wangtek 5250ES	
	Adaptec AHA-154*nx* (ISA)	Wangtek 5525ES	
	Adaptec AHA-154*nx* (ISA)	Wangtek 51000ES	
	Adaptec AHA-154*nx* (ISA)	WangDAT 3100 DDS DAT	See note-2
	Adaptec AHA-154*nx* (ISA)	WangDAT 3200 DDS-DC DAT	See note-2
	Adaptec AHA-154*nx* (ISA)	Exabyte EXB-8200	See note-2
	Adaptec AHA-154*nx* (ISA)	Exabyte EXB-8205	See note-2
	Adaptec AHA-154*nx* (ISA)	Tandberg TDC-3660	See note-2
	Adaptec AHA-1640*x* (MCA)	Archive Viper 2060S	
	Adaptec AHA-1640*x* (MCA)	Archive Viper 2125S	
	Adaptec AHA-1640*x* (MCA)	Archive Viper 2150S	
	Adaptec AHA-1640*x* (MCA)	Wangtek 5099ES	
	Adaptec AHA-1640*x* (MCA)	Wangtek 5125ES	
	Adaptec AHA-1640*x* (MCA)	Wangtek	

	5150ES		
	Adaptec AHA-1640*x* (MCA)		Wangtek
	5250ES		
	Adaptec AHA-1640*x* (MCA)		Wangtek
	5525ES		
	Adaptec AHA-1640*x* (MCA)		Wangtek
	51000ES		
	Adaptec AHA-1640*x* (MCA)		WangDAT
	3100 DDS DAT See note-2		
	Adaptec AHA-1640*x* (MCA)		WangDAT
	3200 DDS-DC DAT	See note-2	
	Adaptec AHA-1640*x* (MCA)		Exabyte
	EXB-8200	See note-2	
	Adaptec AHA-1640*x* (MCA)		Exabyte
	EXB-8205	See note-2	
	Adaptec AHA-1640*x* (MCA)		Tandberg
	TDC-3660	See note-2	
AIC6360	Adaptec AHA-1510A (ISA)	Wangtek 5099ES	See note-2
	Adaptec AHA-1510A (ISA)	Wangtek 5125ES	See note-2
	Adaptec AHA-1510A (ISA)	Wangtek 5150ES	See note-2
	Adaptec AHA-1510A (ISA)	Wangtek 5250ES	See note-2
	Adaptec AHA-1510A (ISA)	Tandberg TDC-3660	See note-2

Note 1 The MCA-bus version of the Archive QIC-02 host adapter card (Archive VP-409) is NOT supported.

Note 2 These controller card/tape drive combinations are only supported by the TF $TAPE product. They are NOT supported by the TE $TAPE product.

Note 3 This controller-card/tape-drive combination is no longer available.

Please refer to the Global Operating Manual (BOS) for full details of the Adaptec AHA-154*nx* and AHA-1640*x* SCSI host adapter cards supported by $TAPE.

The following tape controller cards and tape drives are supported by $TAPE on Global System Manager (MS-DOS and Windows) and Global System Manager (Novell NetWare) configurations (this table replaces the information contained in Appendix D of the Global Tape 7.0 Manual):-

Name	*Controller card*	*Tape drive*	*Notes*
CD-TAPE	Everex QIC-02 ISA bus	Stream/60	See note-3

	Everex QIC-02 ISA bus	Stream/125	See note-3
	Everex QIC-02 ISA bus	Stream/150	See note-3
CD-TAPE note-3	Everex QIC-02 MCA bus	Stream/60	See
	Everex QIC-02 MCA bus	Stream/125	See note-3
	Everex QIC-02 MCA bus	Stream/150	See note-3
CD-TAPE	Wangtek QIC-02 ISA bus	Wangtek 60Mb	
	Wangtek QIC-02 ISA bus	Wangtek 120Mb	
	Wangtek QIC-02 ISA bus	Wangtek 150Mb	
CD-TAPE	Wangtek QIC-02 MCA bus	Wangtek 60Mb	
	Wangtek QIC-02 MCA bus	Wangtek 120Mb	
	Wangtek QIC-02 MCA bus	Wangtek 150Mb	
VIPER note-1	Viper VP-402 ISA bus	Archive Viper 2150L	See
ADAPTEC or AHA-TAPE	Adaptec AHA-154*nx* (ISA)	Archive Viper 2060S	
	Adaptec AHA-154*nx* (ISA)	Archive Viper 2125S	
	Adaptec AHA-154*nx* (ISA)	Archive Viper 2150S	
	Adaptec AHA-154*nx* (ISA)	Wangtek 5099ES	
	Adaptec AHA-154*nx* (ISA)	Wangtek 5125ES	
	Adaptec AHA-154*nx* (ISA)	Wangtek 5150ES	
	Adaptec AHA-154*nx* (ISA)	Wangtek 5250ES	
	Adaptec AHA-154*nx* (ISA)	Wangtek 5525ES	
	Adaptec AHA-154*nx* (ISA)	Wangtek 51000ES	
	Adaptec AHA-154*nx* (ISA)	WangDAT 3100 DDS DAT	See note-2
	Adaptec AHA-154*nx* (ISA)	WangDAT 3200DDS-DC DAT	See note-2
	Adaptec AHA-154*nx* (ISA)	Exabyte EXB-8200	See note-2
	Adaptec AHA-154*nx* (ISA)	Exabyte EXB-8205	See note-2
	Adaptec AHA-154*nx* (ISA)	Tandberg TDC-3660	See note-2
	Adaptec AHA-1640*x* (MCA)	Archive Viper 2060S	
	Adaptec AHA-1640*x* (MCA)	Archive Viper 2125S	
	Adaptec AHA-1640*x* (MCA)	Archive Viper 2150S	
	Adaptec AHA-1640*x* (MCA)	Wangtek 5099ES	
	Adaptec AHA-1640*x* (MCA)	Wangtek 5125ES	

	Adaptec AHA-1640*x* (MCA)		Wangtek 5150ES
	Adaptec AHA-1640*x* (MCA)		Wangtek 5250ES
	Adaptec AHA-1640*x* (MCA)		Wangtek 5525ES
	Adaptec AHA-1640*x* (MCA)		Wangtek 51000ES
	Adaptec AHA-1640*x* (ISA)	WangDAT 3100 DDS DAT	See note-2
	Adaptec AHA-1640*x* (ISA)	WangDAT 3200DDS-DC DAT	See note-2
	Adaptec AHA-1640*x* (MCA)		Exabyte EXB-8200 See note-2
	Adaptec AHA-1640*x* (MCA)		Exabyte EXB-8205 See note-2
	Adaptec AHA-1640*x* (MCA)		Tandberg TDC-3660 See note-2
AIC6360	Adaptec AHA-1510A (ISA)	Wangtek 5099ES	See note-2
	Adaptec AHA-1510A (ISA)	Wangtek 5125ES	See note-2
	Adaptec AHA-1510A (ISA)	Wangtek 5150ES	See note-2
	Adaptec AHA-1510A (ISA)	Wangtek 5250ES	See note-2
	Adaptec AHA-1510A (ISA)	Tandberg TDC-3660	See note-2

ASPI Any Adaptec controller card and SCSI tape drive supported by the ASPI.SYS device manager family. There are MS-DOS ASPI device managers for all the SCSI host adapters produced by Adaptec. All these device drivers provide a common interface to the SCSI tape devices attached to the host adapter card. This implies that the ASPI $TAPE controller **SHOULD** work with any member of the Adaptec host adapter family. The ASPI $TAPE controller has only been tested on the following Adaptec host adapter cards:-

Host adapter card	*MS-DOS device manager*
AHA-1542CF	ASPI4DOS.SYS
AHA-1540CF	ASPI4DOS.SYS
AHA-1510A	ASPI2DOS.SYS

Note 1 The MCA-bus version of the Archive QIC-02 host adapter card (Archive VP-409) is NOT supported.

Note 2 These controller card/tape drive combinations are only supported by the TF $TAPE product. They are NOT supported by the TE $TAPE product.

Note 3 This controller-card/tape-drive combination is no longer available.

Please refer to the Global Operating Manual (MS-DOS and Windows) and Global Operating Manual (Novell NetWare) for full details of the Adaptec AHA-154*nx* and AHA-1640*x* SCSI host adapter cards supported by $TAPE. IMPORTANT NOTE: The ADAPTEC/AHA-TAPE tape controller does not function correctly when Global System Manager is running under Microsoft Windows. The ASPI controller must be selected if $TAPE is to be used when Global System Manager is running under Microsoft Windows.

The tape drives supported by $TAPE on Global System Manager (Unix) configurations are described in the relevant Global Configuration Notes.

The full range of Global System Manager (BOS) and Global System Manager (MS-DOS and Windows) $TAPE controllers included in the P.$TAPE library is as follows:-

Name	*Description*	*TE/TF*
J5CT03	Adaptec AHA-154*nx* or AHA-1640*x*	Both
J5CT04	Everex/Wangtek QIC-02	Both
J5CT08	Archive Viper QIC-02	Both
JWCT09	Generic ASPI	Both
J5CT0B	Adaptec AHA-1510A	TF only

You should be aware of the following points when using $TAPE:-

· If an attempt is made to restore a sub-volume that was saved from a hard-disk configured with 99 files per directory to a hard-disk configured with 250 files per directory, the following error message will be displayed:-

Incompatible directory size, key <CR> to continue:

If <CR> is keyed, $TAPE will ignore the sub-volume and attempt to restore the next sub-volume in the restore list. If the reply to the above prompt is <CTRL A>, $TAPE will restore the mismatched directory and rebuild the 250 file directory provided the chosen destination unit is not protected. This facility is only available when the files/directory on the tape is 99 and the files per directory on the disk is 250.

The following zap can be applied to V7.0C P.$TAPE to prevent the above warning message from appearing:-

```
ZZZZZZ
HMRWQN
HLJRNH
GXWTTM
QMJMJK
YNXVGM
VQMKZQ
```

```
VZBHKY
WFMGNH
FHFFTT
```

NOTE THAT IT IS NOT POSSIBLE TO RESTORE A SUB-VOLUME THAT WAS SAVED FROM A HARD-DISK CONFIGURED WITH 250 FILES PER DIRECTORY TO A HARD-DISK CONFIGURED WITH 99 FILES PER DIRECTORY.

- The erase operation on DAT and Exabyte tape drives takes a considerable amount of time to complete (up to two hours). Early versions of $TAPE (i.e pre V7.0) could handle this situation because the SCSI tape controller used an infinite loop to wait for a tape operation to finish. The controllers packaged for $TAPE V7.0, and later, incorporate a timeout to prevent the computer from hanging if a SCSI command does not complete. The timeout was set to 3 minutes, which allowed a 600' tape to be erased. The value has been increased to 5 minutes to allow 1000' tapes to be erased. Selecting the erase option on either DAT or Exabyte drives will timeout and report an ERROR Y.

DO NOT ATTEMPT TO USE THE $TAPE ERASE OPERATION ON DAT OR EXABYTE TAPES.