Keeping Alto-Land Alive

or

You Can Tell the Pioneers by the Arrows in Their Backs

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File on: [IFS]<AltoDocs>AltoLand.bravo, .press

Alto-Land

Here (at last) is the documented wisdom of Alto-Land and instructions for keeping it alive. I've organized it as a set of commonly asked questions and answers -- so you don't have to read the whole thing to find out what's going on. Whenever possible I've also included a pointer to existing documentation. Good Luck.

What Document Describes the XEROX University Grant?

There is a single copy of the document XEROX University Computer Science Program in the folder marked **Alto-Land** in 433a. It describes all terms and conditions of the grant and should be the reference point for all legal and moral considerations.

Who is our Contact at XEROX?

Dan Swinehart (Swinehart@PARC-Maxc) serves as the Stanford liason. All questions are funneled through him to prevent overloading others at PARC. You may also speak with Prof. Brian Reid ([IFS]<Reid>) here at Stanford. In theory these two people perform all of the interaction required by the grant.

How is the Equiptment Serviced?

Mark Roberts ([IFS]<ROBERTS>) is currently in charge of the Altos, If you can't ever get a hold of him then call XEROX maintainence. Their service dispatch number is (800) 262-1772. You'll have to give the installation number of the device (usually of the form 170Lnnn located on top of the Alto card-cage) and a short description of the problem. They will contact the local technical support people. Please don't send people on a wild goose chase by not researching the problem first. NB: Our service contract is probabily going to change sometime soon. We may end up doing everything ourselves..

How Can I Fix an Alto Myself?

This is a difficult question. Fixing Altos requires a great deal of experience and common sense. There are spares in the storage room 460a for most processor boards and other components. Board swapping is probabily the most effective way to isolate a problem. Very often one or more chips have popped out of their sockets. You should try re-seating all the chips before declaring a board bad. There are also several good diagnostic programs for isolating faults. The Dynamic Memory Test (DMT) program runs whenever an Alto is idle (displaying a Stanford Tree as it goes). By depressing the 'S' key you can get a summary of memory errors found. Inside 460a there is a tube of 16K RAMS that can replace dead ones you find with DMT (there are control store RAMS also). The micro-machine can be tested with a utility called MadTest available via the NetExec. Lastly, disks can be checked out with the Diablo Exerciser (DIEX) also available from the NetExec.

What's the Easiest Way to Abuse an Alto?

The best way to destroy an Alto is to force a disk pack into the drive at the wrong angle and then power the drive up. Essentially what happens is that the heads get ripped off and grind a Grand Canyon onto the surface of the pack. If that's not enough then take the same pack around to six other Altos and try to boot from it. Currently Users are Forbidden to move disks, since we have adopted this policy the incidence of head crashes has gone down. If you are still not convinced that of this, then keep in mind that a single disk head costs about $300. Similar things will happen if you move an Alto while the drives are running. The Mouse may be obliterated by smashing it onto the table -- breaking the bearings inside. You probabily already know how to dispatch a keyboard..

How Are Accounts Maintained?

Only a "wheeled" account on the IFS can enable and create accounts. Currently the only such account is 'System'. The new cost center has altered the policy regarding who gets accounts -- check with someone before creating any new ones. In particular, to setup a new account: <1> Run 'Chat' or 'Telnet' from an Alto and connect to the IFS. <2> Login as a wheeled account. <3> Type 'Enable'. <4> Type 'Create' followed by the account name and default password. <5> Confirm the create will a couple of returns. <6> 'Quit' closes the connection. Presently, 1000 disk pages is the quota for new accounts. Since the IFS only holds about 250,000 pages, and we have over 300 users, this represents a potential bind.

Where is the Alto Documentation?

The majority of Alto documentation is kept on the IFS directory <AltoDocs>. A smaller percentage is scattered around on individual directories such as <IFS> and <Laurel>. The best way to print such documentation is to use the 'Print' command when connected to the IFS via Chat or Telnet.

How Are Backups of the File Server Performed?

The T-80 drive on the IFS is devoted to performing incremental disk-based backups. Read the documentation on <IFS> for complete information on changing the backup packs. Backup packs are stored in 460a and should be rotated based on their sequence numbers (currently 0-7). Be sure to record the backup dates on the pack label so they can be properly identified if you ever need to reconstruct the file system.

How is the Dover Maintained?

You'll need to add toner and fuser oil every week or so. Complete instructions are contained in a manual inside the left front door of the printer. XEROX should be consulted for less periodic maintainence such as changing the developer and overhauling the drum. Directions for changing the paper are posted on top of the machine. The Spruce server that runs on the attached Alto is documented on <Printing>SpruceManual.press. A summary of Spruce commands is posted above the Alto. The print quality (toner density) is adjusted via a control inside the top right cover. It's labled "control normal" although it really acts like a switch in this implementation of the printer.

When it's turned all the way 'on' the toner density is automatically calculated for each page depending on the percentage of black area on that page. If the density is too high then 'overtoning' may result (ie: image of previous pages shows through onto current page). The only way to correct this is to turn the control 'off' for several hundred sheets until the density reaches a sane level. Then turn the control back on and the density will continue at that level. To raise the density level put the printer in 'local' mode and depress the 'print density increase' button for 30 seconds at a time. Print a few pages until you find an optimal setting.

How is Software Distributed?

All Alto-based software is stored on the IFS. A common failure is the local disks on the Altos getting smashed by careless users. It's possible to restore a local disk in one operation rather than FTP'ing each file individually. To restore a disk get the 'CopyDisk' program running (via the NetExec if necessary) and type: <1> 'Login' with a valid account and password. <2> 'Copy [IFS]<Disks>System7.dp0 dp0'. <3> 'Copy [IFS]<Disks>System7.dp1 dp1'. <4> 'Quit' when it's all over. What you've just done is to copy a block-for-block disk image of the the latest system release from the IFS to the Alto via the Ethernet. This implies that system maintainers should first construct a new system release on a local disk then use CopyDisk to store it's image as System[n+1] on the <Disks> directory.

How Do I Bring the IFS Up and Down?

The IFS is a critical part of the Ethernet. It provides user authentication, a time server, a boot server (NetExec), and permanent file storage. It is therefore wise to treat it with some respect, particurally when bringing it up and down, to avoid the painful rebuilding process. To bring down the IFS gracefully login under a wheeled account, enable, and issue the 'halt' command. After a few minutes the IFS Alto will return to the Executive. You may now spin-down and write-lock the drives if you're powering down the machine room. To bring it back up just type 'IFS' to the Executive when the drives are ready. The current IFS had a bug which prevents the time server from being activated unless there is a gateway server on the network. Since our network currently dosen't have a Gateway you must patch the IFS each time it is brought up so the time server will be turned on. After the IFS has initialized itself (hourglass cursor has turned into 'IFS' cursor) wait for disk activity to settle down (cursor stops moving for at least 30 seconds) and Swat it by typing ctrl-shift-swat (swat is the bottom right blank key). You are now talking to Swat. Type 'ctrl-Y IFS' followed by return. This will read the IFS symbol table so you can type '@ts+13 ctrl-o' which prints in octal the indirect value of time server + 13. This is the time server enable flag. Set it by typing '0' followed by return (that's right, 0 *not* 1). To proceed with the time server enabled type 'ctrl-P'. The IFS cursor should now reappear.

How is New Software From XEROX Distributed?

PARC will release new software by placing a copy of it on their Maxc machine and mailing the Stanford liason a release notice. Since Maxc has an Arpanet connection it is theoretically easy to transfer files directly from Maxc to our IFS. Unfortunatly, we still don't have an Ethernet-to-Arpanet gateway on our end. Instead you have to shuttle a disk between here and PARC, or use "WalkNet" (documented on the Score file <SU-Net>WalkNet.hlp), or do nothing at all (the usual default). Software distribution is still one area that needs serious attention.

How is the Network Directory Updated?

The network directory (maintained by the IFS) holds all of the coorespondences between Ethernet addresses and logical names. When new hosts are added to the network this directory must be updated to reflect the new topology. Follow the directions in the document <Pup>NetDirMaint.press when changing the directory. The password for the BuildNetworkDirectory program is 'Cerberus' (it's also the password for the GateControl program).

Where are all the Altos Located?

Here are the last sighted locations (things more around quite a bit).

Number:	Name:	Location:	Notes:
100	jks	MJH 433a	-- name should be changed.. *CYPRESS*
101	Yolo	MJH 020	— fixed needs disks
102	Inyo	MJH 460	
103	Yuba	MJH 460	
104	Mono	MJH 460	
105	Diego	MJH 225	-- HPP terminal room
106	Mojave	MJH 408	
107	Yosemite	MJH 408	
110	Marin	MJH ?	
111	Monterey	MJH 450	
112	Madera	Sumex	
113	Trinity	ERL 238	
114	Toro	MJH 460	
115	Napa	CIS Trailers	
116	Almanor	MJH 450	
117	Palomar	MJH 320	-- NA terminal room
200	IFS	MJH 020	-- basement machine room
201	Dover	MJH 221	-- second floor copier room

How is Documentation Distributed?

We have several hundred copies of the "Alto User's Handbook" and "Mesa Language Manual" that can be 'rented' for $5.00 from Connie Stanley, Publications Coordinator, MJH 422. The Grant specifies that we are not to release documentation to third parties. The rental procedure is an attempt to make sure they get returned.

[PHOTO: Recording initiated Sun 26-Jun-83 9:54PM]

@help dover
The DOVER program sends files to be printed on the Dover. Switches are:

Switch   Default Description

/Header   off Heading at top of each page. /NoHeader to suppress.
/Hold: <time> now The listing will not get printed until time specified
.
/Repeat: n   1 Make n copies of the listing. /Copies: n is the same
.
/Font: <name> SAIL Use named font (name can include size).
/FSize: n   8 Set font size to n.
/NChars: n   95 Set max number of chars per line to n.
/NLines: n   69 Set number of lines/page to n (sets LHeight).
/LHeight: n   131 Set line height (vertical distance per line) to n.
/XLineS: n   20 Set extra interline spacing to n (sets LHeight).
/TMargin: n 1092 Set top margin to n.
/BMargin: n   950 Set bottom margin to n.
/LMargin: n 1070 Set lefthand margin to n.
/Rotate   off Rotate listing 90 degrees counter-clockwise.
             Rotated defaults: Font = SAIL8(rot90); NChars = 132;
                   NLines = 58; TMar = 1070; LMar = 950;
                   BMar = 850; LHeight = 115.
(Margins, LHeight, and XLineS above are in thousandths of an inch.)

The DOVER program accepts a command line with a list of files separated
by
commas. For each file you may specify pages, e.g. "DOVER MAIL.TXT (2,4:*
)",
where "*" means the last page. Switches may come before the filename or af
ter
the pages specification. Before the filename, switches are sticky and ap
ply
to all subsequent files, whereas after the pages specification they are lo
cal
and apply only to the current file. For example, in

     @dover /header foo.txt, bar.pas /noheader, bazola.margarine

the /Header switch applies to all three files, but a local /NoHeader swi
tch
overrides it in the second case. The /Repeat (or /Copies) switch is ne
ver
sticky and so is not legal until after the filename. No switches, save o
nly
/Hold and /Repeat, apply if the file being spooled is a Press file, si
nce
Press files contain complete formatting information.

To get a DOVER command with command completion (recognition), you can "DECL
ARE
PCL-ROUTINE SYS:DOVER.PCL", which you may type to the EXEC or put in y
our
COMAND.CMD.

You can personalize the default switch settings in your SWITCH.INI file. The
DOVER program will scan all lines beginning with the word DOVER for one
or
more default switches. For example, if you have

        DOVER/Font:GACHA10/NLines:54/TMargin:1000/BMargin:1000/LMargin:1000

in your SWITCH.INI, you will default your output to tenpoint Gacha instead
of
the normal default of eightpoint Sail, with fifty-four lines to a page inst
ead
of the normal default of sixty-nine lines, and with one-inch top, bottom,
and
left margins. Explicit switches in your command line override the defa
ult
switches in your SWITCH.INI file.

You can set the line spacing with any one of the three switches /NLin
es,
/LHeight and /XLineS, or you can leave it to the default. The default spac
ing
is done by setting XLineS = 20 and using the formula below. Setting XLine
S = 0
results in fairly tight line spacing, but negative values for XLineS are a
lso
permitted, for even tighter spacing. Unless NLines or LHeight is specifi
ed,
this formula determines the spacing:

$$LHeight = XLineS + \frac{FSize * 1000}{72} \text{ (thousandths of an inch)}$$

For rotated output with neither NLines nor LHeight specified, this form
ula
applies unless there is also NO FONT SIZE and NO XLINES given, in which c
ase
NLines = 58 is used, to fit one lineprinter-format page per Dover page.
@po

[PHOTO: Recording terminated Sun 26-Jun-83 9:54PM]