The *mar345* Software Guide

Version 1.2
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1. Distribution Media

Media	OS	Suggested directory	Mount CD-Rom with
CD-Rom	IRIX 5.x,6.x	/usr/people/mar345	mount -t iso9660 -r /dev/rdsk/dksXdYvol /CDROM
	DEC Unix 5.0	/usr/users/mar345	mount -t iso9660 -r -o rrip /dev/rzYc /mnt
	Linux, 2.0.x	/home/mar345	mount -t is09660 -r /dev/cdrom /mnt/cdrom

X denotes the SCSI-controller (e.g.0) and Y the SCSI-id (e.g. 4).
Most executable programs are also available as gzip compressed files via anonymous FTP from ftp.EMBL-Hamburg.de, directory pub/marx/mar345/.... Due to their size (180 MB), scanner calibration files are not available per FTP. Please contact X-ray Research for assistance.

2. Compilation Notes

OS	Compilers used	Motif version used	
IRIX	C-7.1	Motif 1.2.4	X11R6

[redacted]

3. Environment

The following logicals assigments must be set to run certain programs:

Variable	Description	Used by
MARHOME	Master directory of software distribution.	-
MARLOGDIR	Directory where log files will be created.	*mar345, mar345xf, scan345, marHKL*

4. Directory Structure

The ***mar345*** software distribution directory ($MARHOME) contains the following subdirectories:

Subdirectory	Contents
bin/sgi **bin/osf** **bin/linux**	Binary executables for corresponding platforms.
man/1	Unformatted man pages for selected programs.
man/cat1	Formatted man pages (SGI).
man/man1	Compressed unformatted man pages (Linux & DEC Unix)
man/ps	Postscript files of formatted man pages, ready for printing.
man/doc	ASCII text of formatted man pages, ready for online read (more).
man/help	Online help files for GUI's (*mar345,marView, marTools*).
log	Log-files for programs *mar345* and *scan345*.
log/log	Up to 99 versions of mar.log files.
log/lp	Up to 99 versions of mar.lp files (statistical output).
log/spy	Up to 99 versions of mar.spy files (native controller messages).
log/sets	Data collection strategy template files for *mar345*.
src	Source code of selected programs.
tables	Scanner specificic calibration and configuration files.
Optional:	
marflm	Latest *marFLM* distribution.
marxds	Latest *marXDS* distribution.

5 Description of Programs

Name	man page	Priority	Description
mar345	mar345	A	GUI for data collection and display.
marstart	–	A	Works together with program *mar345* and must be available.
marView	marView	A	GUI for data display.
marTools	marTools	A	GUI for image file manipulation: format conversion, etc.
			(not installed in a standard SGI installation).
marHKL	–	B	GUI for HKL processing package (DENZO, xdisp).
marFLM	–	B	GUI for MOSFLM processing package.
marXDS	–	B	GUI for XDS processing package (XDS, xscale).

Hardware related programs:

The documentation can be found in directory $MARHOME/man. Several formats are available:

Directory	Description
man/1	Unformatted man pages for selected programs.
man/cat1	Formatted man pages (SGI).
man/man1	Compressed unformatted man pages (Linux & DEC Unix).
man/ps	Postscript files of formatted man pages, ready for printing.
man/doc	ASCII text of formatted man pages, ready for online read (*more*).
man/help	Online help files for GUI's (*mar345,marView, marTools*).

Name	Description
Programs:	
mar345	Documentation for program *mar345*.
marView	Documentation for program *marView*.
marTools	Documentation for program *marTools*.
tkmarcvt	Documentation for program *tkmarcvt*.
mar345xf	Documentation for program *mar345xf*.
scan345	Documentation for program *scan345*.
marsim	Documentation for program *marsim*.
marcvt	Documentation for program *marcvt*.
spiralpack	Documentation for program *spiralpack*.
catmar	Documentation for program *catmar*.
marPeaks	Documentation for program *marPeaks*.
marIndex	Documentation for program *mar*Index.
marPredict	Documentation for program *marPredict*.
marStrategy	Documentation for program *marStrategy*.
Others:	
mar345_formats	Documentation for *mar345* image formats.

7. Installation on SGI IRIX

7.1 Installing the Software (IRIX 6.5)

7.1.1 Login as user "root" and create a new user account called ***mar345***

Do the following:
a) From the toolchest (usually in the upper left corner of the screen) choose "**System Manager**" from the "System" menu

b) In the main window of the "**System Manager**", choose: "**Security and Access Control...**"
c) Select "**Add a User Account**" and go through steps 1 to 10.
Choose "**mar345**" as "**Login name**" (suggested).
Choose "**Password**", "**User-ID**" and "**Primary Group**" as desired.
Choose "**/usr/people/mar345**" as "**Home Directory**" (suggested).
Choose "**tcsh**" as "**Shell Program**" (strongly recommended).
As a last step, press "**OK**" to accept the settings.

7.1.2 Login as user: **mar345**

7.1.3 Installing the software from CD-ROM:

Insert the CD-ROM in the CD-ROM reader. After a couple of seconds, the automounter should mount the CD automatically as /CDROM. If not, the super-user should try:

mount -t iso9660 -r /dev/rdsk/dks0d4vol /CDROM

where 4 is the SCSI-unit number of the CD-ROM on the system, which may vary. If you are not certain, which SCSI-unit your CD-ROM drive uses, try comand:

hinv

to get a "hardware inventory" of your system which will say something like:

CDROM: unit 4 on SCSI controller 0:

When successful, the contents of the CD-ROM should be copied into the login directory of the account mar345.To do so, as user "mar345" type:

/CDROM/mar_install

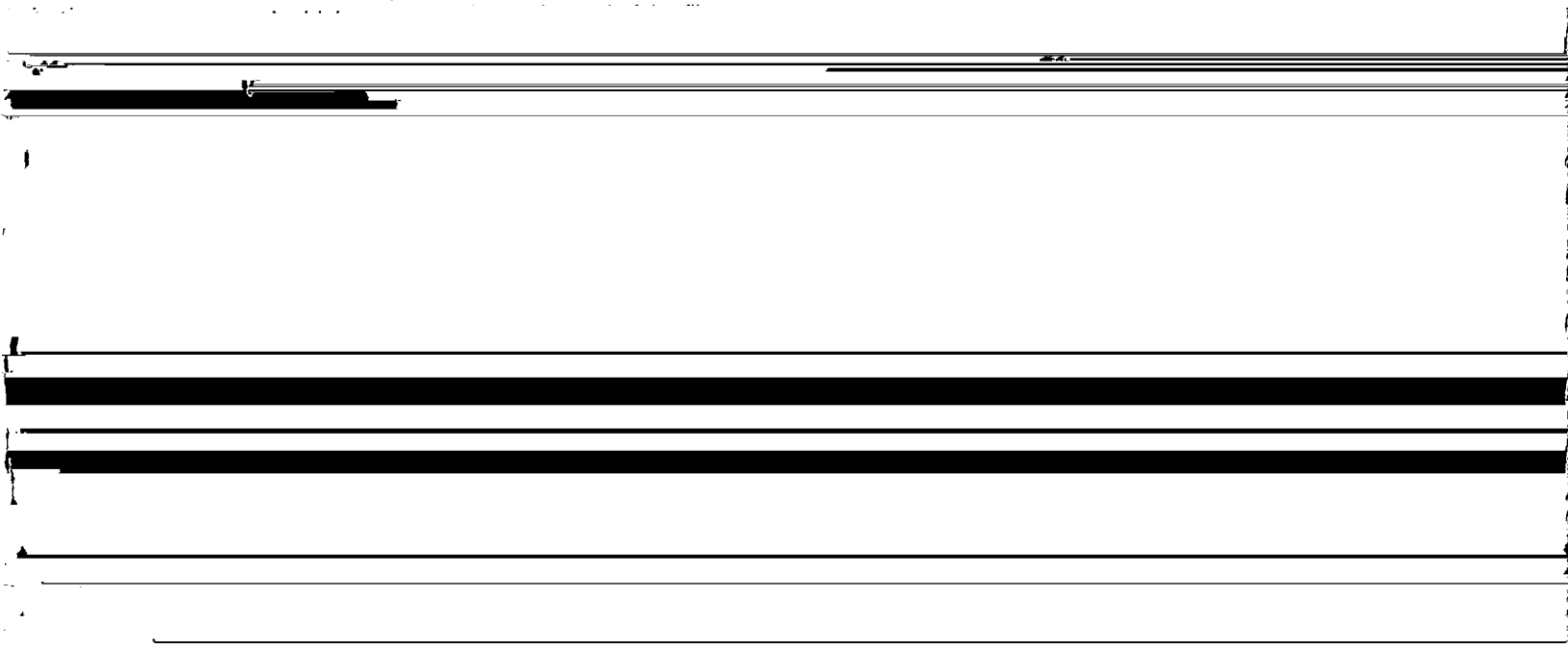
The installation script chooses reasonable defaults that may be accepted or modified.

7.1.2 Setting Up the Ethernet Connection

The scanner control program *mar345* communicates with the scanner through a Ethernet interface. To use *mar345*, the network must be configured to meet the requirements of the mar controller.The mar scanner will respond only to requests made to IP–address 192.0.2.1. The mar scanner also requires the host computer Ethernet interface to be set to address 192.0.2.2. These addresses belong to a pool of addresses that are not assigned to official networks so there should not be any conflict with the outside world.
Do the following:

7.1.2.1 Edit file /etc/hosts, e.g. type:

jot /etc/hosts



192.0.2.1 mar345
192.0.2.2 gate–$HOSTNAME

where $HOSTNAME is the original name of your computer, e.g. if the computer is called "mars", then write:

192.0.2.2 gate–mars

7.1.2.2 If the second network interface is not yet configured, edit file /etc/config/netif.options:

jot /etc/config/netif.options

and modify lines:

: if2name=
: if2addr=gate–$HOSTNAME

to:

if2name=ec1
if2addr=gate–$HOSTNAME

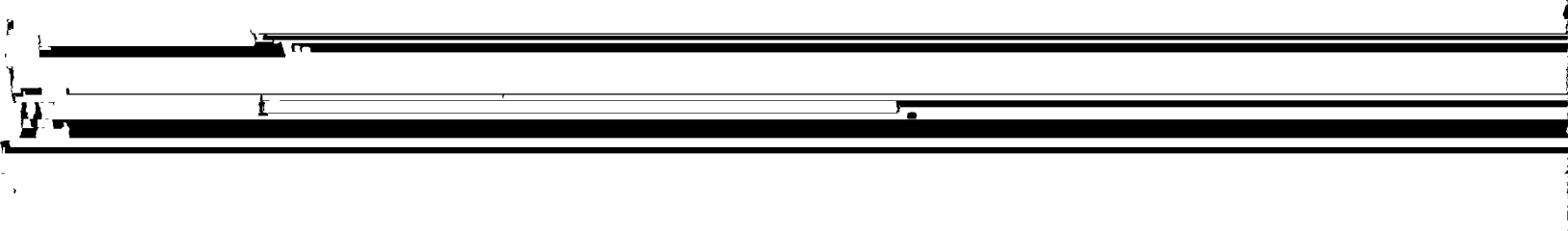
7.1.2.3 Reboot.

7.1.2.4 Check settings

The second network interface (ec1) should now be configured and you should be able to access other hosts (e.g mar345) on network 192.0.2. To check, type:

/usr/etc/ifconfig ec1

This command should come back with something like:



8. Installation on DEC Unix

8.1 Installing the Software (DEC Unix 4.0)

8.1.1 Create a new user account called ***mar345.***
Type:
a) **su** = become superuser

c) In the main window of the "**Account Manager**", choose: "**Add...**"
d) In the window "**Create/Modify Local User**" fill in at least the "**User name**" and "**Shell**" press "**OK**".
As default shell, the "/bin/tcsh" is recommended. However, the "tcsh" is not installed by default on DEC Unix 4.0. If "tcsh" is unavailable (look also in /usr/bin and /usr/local/bin) choose: "**/bin/csh**".
As "**Home Directory**" use of **/usr/users/mar345** is suggested. At this time you may create a

8.2 Setting Up the Ethernet Connection

The scanner control program *mar345* communicates with the scanner through a Ethernet interface. To use *mar345*, the network must be configured to meet the requirements of the mar controller.The mar scanner will respond only to requests made to IP–address 192.0.2.1. The mar scanner also requires the host computer Ethernet interface to be set to address 192.0.2.2. These addresses belong to a pool of addresses that are not assigned to official networks so there should not be any conflict with the outside world.
Do the following:

8.2.1 Configure the second Ethernet card (tu1)

Type:

1.) **su**	= become superuser	
2.) **/usr/sbin/netconfig**	= call the "Network Configuration" GUI	
3.) Choose	"**Ethernet Interface – tu**1"	
4.) Select:	"**tu1 – Interface Configuration:**"	**Enable**
5.) Enter	"**Host name:**"	**marcontrol**
6.) Enter	"**IP address:**":	**192.0.2.2**

[redacted]

vi /etc/hosts

and add the following line to the end of the file:

192.0.2.1 mar345

If you can't find an entry for name marcontrol, also add:

192.0.2.2 marcontrol

9.1 Installing the Software

9.1.1 Create a new user account called ***mar345.***

Type:

a) **su** = become superuser

b) **adduser mar345** = adds user account "mar345" using defaults.

c) Edit **/etc/passwd** and change the default shell of user "**mar345**" to "**/bin/tcsh**".
Possibly, the password of account "**mar345**" has to be set.

9.1.2 Login as user: **mar345**

9.1.3 Installing the software from CD-ROM:

9.2.1 Configure the second Ethernet card (eth1)

Type:

1.) **su** = become superuser
2.) **/usr/bin/netcfg** = call the "Network Configuration" GUI
3.) Choose section "**Interfaces**"
4.) Choose button "**Add**"
5.) Choose "**Interface Type:**" **Ethernet**
6.) In window "**Edit Ethernet/Bus Interfaces**"
Enter: "**IP**": **192.0.2.2**
Enter: "**Netmask**": **255.255.255.0**
Select: "**Activate interface at boot time**"
8.) Press: **Done**
9.) Confirm: **Save configuration**
10.) In main window, select interface "**eth1**" and click button "**Activate**"
11.) Click button "**Save**" and "**Quit**".

For the kernel to actually initialize 2 Ethernet cards, please consult the documentation of the Linux boot load "**lilo**", i.e. read the lilo man page or the lilo documentation in /usr/doc/lilo*.

Note: On SuSE systems, the integration of the second Ethernet card is done via the SuSE system administration tool (yast or yast2). Program netcfg is not available.

9.2.2 Edit file /etc/hosts, e.g. type:

vi /etc/hosts

and add the following line to the end of the file:

192.0.2.1 mar345

If you can't find an entry for name marcontrol, also add:

192.0.2.2 marcontrol

The second network interface (eth1) should be configured now and you should be able to access other hosts (e.g mar345) on network 192.0.2. To check, type:

ifconfig eth1

This command should come back with something like:

```
eth1      Link encap:10Mbps Ethernet  HWaddr 00:80:C6:FF:EF:08
          inet addr:192.0.2.2  Bcast:192.0.2.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0
          TX packets:0 errors:0 dropped:0 overruns:0
          Interrupt:12 Base address:0x320
```

The correct routing table can be checked using command:

netstat -r

It should say something like:

Kernel IP routing table

Destination	Gateway	Genmask	Flags	MSS	Window	irtt	Iface
193.141.161.0	*	255.255.255.0	U	1500	0	0	eth0
192.0.2.0	*	255.255.255.0	U	1500	0	0	eth1
127.0.0.0	*	255.0.0.0	U	3584	0		

9.2.3 Connect the scanner to the second Ethernet card and power it up.

10. Running mar345

10.1 Turn the scanner on. Wait until you hear the plate locking sound (click!).

10.2 Login as user mar345.

10.3 Try to talk to the scanner, i.e. type:

ping mar345 or /usr/etc/ping mar345 (SGI)

If the scanner is accessible, ping comes back with:

PING mar345 (192.0.2.1): 56 data bytes
64 bytes from 192.0.2.1: icmp_seq=0 ttl=255 time=1 ms
...

If ping comes back with:

ping: mar345: Unknown host

then, mar345 has not been inserted into file /etc/hosts (see 2.1).
If ping hangs with:

[redacted]

then the reason might be
a) the interface has not been configured correctly.