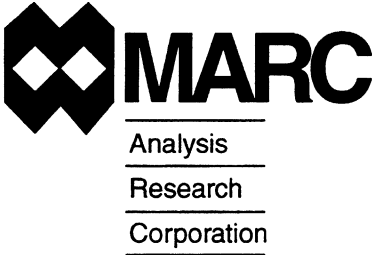


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MARC/Link-S

Installation Instructions
for UNIX Systems

1.1 Release

MARC/Link-S Installation and Usage on UNIX machines

This document describes the installation and usage of the MARC/Link-S program on the UNIX platforms listed in Table 1. The instructions given require a basic knowledge of the machine you are loading the MARC/Link-S software. No attempt is made to teach the use of UNIX commands. A basic knowledge of I-DEAS software operation is also required to correctly setup the interface.

This document contains a quick installation section intended for the experienced MARC software users, a section containing details about the installation procedure, and a section concerning the usage of the MARC/Link-S interface.

Appendices include a sample installation session and hints about troubleshooting.

If you encounter a problem during the installation, please contact the customer support staff at the nearest MARC office listed below.

CALIFORNIA - Palo Alto
MARC Corporate Headquarters
260 Sheridan Avenue, Suite 309
Palo Alto, CA 94306, USA
Tel: 1 415 329 6800
Fax: 1 415 323 5892
Email: support@marc.com

CALIFORNIA - San Diego
MARC Analysis Research Corp.
4350 La Jolla Village Drive, Suite 300
San Diego, CA 92122
Tel: 1 619 546 4414
Fax: 1 619 587 8710

CONNECTICUT - Manchester
MARC Analysis Research Corp.
Prestige Office Center
150 North Main Street, Suite 5
Manchester, CT 06040
Tel: 1 203 647 4841
Fax: 1 203 647 4870

MICHIGAN - Ann Arbor
MARC Analysis Research Corp.
25 Frank Lloyd Wright Drive
Ann Arbor, MI 48106-0523
Tel: 1 313 998 0540
Fax: 1 313 998 0542

CZECH REPUBLIC
MARC Overseas, Inc.
Podolska 50
147 00 Praha 4
Czech Republic
Tel: 011 42 2 6121 4123
011 42 2 6121 4111 x252
Fax: 011 41 2 6121 4123

FRANCE
MARC France SA
30 rue de Rocroy
Saint Maur 94100
Paris
Tel: 33 1 418 11 094
Fax: 33 1 418 11 095

GERMANY - Hannover
MARC Software Deutschland GmbH
Alte Dohrener Str. 66
D 30173 Hannover, Germany
Tel: 011 49 511 980 5182
Fax: 011 49 511 980 5187

GERMANY - Munich
MARC Software Deutschland GmbH
Ismaninger Str. 9
85609 Aschheim (bie Munich)
Germany
Tel: 011 49 89 904 50 33
Fax: 011 49 89 903 06 76
Email: support@marc.de

HOLLAND
MARC Analysis Research Corporation
Dublinstraat 32
2713 HS Zoetermeer
The Netherlands
Tel: 011 31 79 3510 411
Fax: 011 31 79 3517 560
Email: support@marc.nl

ITALY
Espri-MARC s.r.l.
16129 Viale Brigata Bisagno 2/10
I-16129 Genova
Italy
Tel: 011 39 10 585 949
Fax: 011 39 10 585 949

UNITED KINGDOM
MARC UK Ltd.
35, Shenley Pavilions
Chalkdell Drive
Shenley Wood
Milton Keynes, MK5 6LB
Tel: 011 44 1908 506 505
Fax: 011 44 1908 506 522

CHINA
MARC Overseas, Inc.
Beijing Yanshan Apartment #1703/04
138 Haidian Road
Beijing 100 086
Tel: 011 86 10 256 3388 x1703/04
011 86 10 256 4375
Fax: 011 86 10 261 5714

JAPAN - Osaka
Nippon MARC Co.,Ltd.
4F 2nd Kimi Building
2-11 Toyotucho Suita-shi
Osaka 564
Tel: 011 81 6 385 1101
Fax: 011 81 3 385 4343

JAPAN - Tokyo
(Asian Operations Headquarters)
Nippon MARC Co.,Ltd.
Shinjuku Daiichi Seimei Building
P.O. Box 5056
2-7-1 Nishi-Shinjuku, Shinjuku-ku
Tokyo 163
Tel: 011 81 3 3345 0181
Fax: 011 81 3 3345 1529
Email: system@marc.co.jp

KOREA
MARC Korea
Dong Kyung Bldg., 7FL
824-19 Yuksam-Dong
Kngnam-Ku
Seoul, Korea
Tel: 011 82 2 561 7543
Fax: 011 82 2 561 7767

Table 1 Versions of MARC/Link-S Running Under UNIX

Computer	Operating System Revision	Tape Load Command
HP 9000-700	HP-UX 9.0 or later	tar xvof /dev/rmt/0h
IBM RS6000	AIX 3.2 or later	tar xvf /dev/rmt0
Silicon Graphics	IRIX 5.2	tar xvof /dev/tape
SUN Sparc	Solaris 2.3 or later	tar xvof /dev/rst8

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Chapter 1: Read me first – Installation Prerequisites

Program revision	Throughout this document, the generic name <i>interface</i> is used to signify the name of your MARC/Link-S revision. However, the installation of your version requires you to use the actual name; e.g., <i>maid100</i> .
Before reading the tape	Decide where the version is to be installed before reading in the MARC/Link-S version from the magnetic media. The MARC/Link-S program requires approximately 100 Mbytes of permanent disk storage capacity. Current security configuration causes the installation directory to be different from your Mentat installation.
Note the license code	The MARC/Link-S version you received has a client specific administration number (e.g., MAID100.U6123) which is basically a <i>license code</i> . This code is found on both the magnetic media and the accompanying <i>Installation Guide</i> . As the installation procedure will prompt you for it, note it well.
Personal data	During installation, you are prompted to supply your name, address, telephone number, etc. This information is sent to the MARC office supplying you the installation passwords and is intended to keep your data up to date at the MARC company.
Password protection	The MARC/Link-S version you received is protected against illegal usage by means of passwords. Until you obtain the passwords, you <i>cannot</i> run the program directly. Passwords are supplied to you from the nearest MARC office after you perform the first two installation steps. These steps are: <ol style="list-style-type: none"> 1. Read in the magnetic media, set the correct path names in various background files, and generate a machine specific identifier for the purpose of creating passwords. 2. Send the machine specific identifier to the nearest MARC office. 3. Upon return of the passwords, enter these in the security. <p>Passwords are normally entered only once.</p>
Multiple machines	In the event a cluster of machines are using a single, shared disk to install the MARC/Link-S program, parts of the installation procedure must be executed on each machine using MARC/Link-S.
Should I be "root"?	Normally, there is no need to be logged in as root. However, you must have write permission to directories where files are copied to. The installation program prompts you for passwords of the owners of such directories.
hostname	Your machine <i>must</i> have a hostname. If no hostname is known, supply one with the command: <i>hostname my_choice_of_hostname</i> (or your system's equivalent command to set the hostname).
FORTTRAN compiler	Prior to MARCK62, special patches had to be applied to MARC requiring a FORTRAN compiler on the host system where MARC analysis jobs were executed.

Chapter 2: Quick Installation Procedure

Step 1: read tape	<code>cd "where_MARC/Link-S_should_be_stored"</code> <code>tar xvof "device"</code>	Read in the tape / cartridge or other type of magnetic media (if you are not familiar with the <code>tar</code> command, see Table 1 or the label on the tape for its syntax) . A directory <code>marclink_s</code> is created.
Step 2: set paths	<code>cd ./marclink_s/maint</code> <code>./maintain_ideasopen</code>	Choosing <i>option 1</i> sets the pathname in MARC/Link-S files to correspond to the current location of the program.
	Menu Selection	You are prompted to supply the version of the Finite Element Method program MARC used at your site. You are also prompted to supply the pathname to the directory where MARC is stored. If you do not have MARC at this site, ignore the prompt. You might be required to provide the password of the owner of the directory where MARC is stored. A special version of MARCK61 is built by the <code>maintain_ideasopen</code> program.
Step 3: system identifier	1) Install MARC/Link-S on your system 2) Security code submenu 2.1) Generate system identifier	Generate a unique system identifier. You will be prompted for your license number either on your tape or on the front of your <i>MARC/Link-S Installation Guide</i> ; e.g., MAID100.U6123. Also, you will be prompted for your name, address, etc.
Step 4: send the system identifier to MARC	2.2) Show the system identifier(s) 2.3) Print the system identifier(s)	The system identifier is stored in the <code>marclink_s</code> subdirectory <code>security</code> in a file called <code>sid001.dat</code> . Send the contents of this file to the nearest MARC office. In return, you receive passwords. You can print this or these files directly.
Step 5: enter the password	2.5) Enter the passwords Do you want to rename license.new to license.dat ? Yes 0) Exit the license submenu	The passwords received from the MARC office is entered by the same installation script <code>maintain_ideasopen</code> . For a first time installation, choose the option <i>add new</i> and enter the license code, password, number of machines and processor code(s): one processor code for each machine allowed to run the MARC/Link-S program .
Step 6: Initialize directory	3) Initialize an I-DEAS working directory	You are prompted to supply the pathname to the directory where MARC/Link-S Interface is to be initiated from I-DEAS.
Step 7: checking	0) Exit from the Initialize submenu 0) Exit form the installation program	Repeatedly choose the <i>exit</i> option to leave the installation script. Go to the directory where the MARC/Link-S Interface is to be initiated from I-DEAS. Follow the instructions provided in a file named README to run the interface.

Chapter 3: Installation Procedure Information

Multiple machines In the event a cluster of machines using a single, shared disk is used to install the MARC/Link-S program, installation steps 2 and 3 need to be executed on each machine MARC/Link-S is used.

Step 1: read tape Decide where the MARC/Link-S program is to be located in the system. This location is called the *parent* directory. For example, if the version is installed as */usr/software/mentat* is the parent directory. A directory called *marclink_s* is created when the magnetic media is read. The name does not have to be *marclink_s*. Rename it if you wish but, not the same as your Mentat directory. You might want to check the contents against the list supplied in Appendix C of this document. If any subdirectory is missing, please contact MARC customer support for further details.

Note: See the label on the magnetic media or Table 1 at the beginning of this document for the syntax of the tar command for your machine, especially if the device name is system specific.

Step 2: set paths patch MARC Set the path names in the MARC/Link-S background files to correspond to the location you have installed the version. You have to start the menu-driven installation shell script *maintain_ideasopen*. From the main menu list, choose *option 1* to set the path names in the MARC/Link-S background files to correspond to the current location of the MARC/Link-S version.

The next question concerns the MARC Finite Element Method program started from within MARC/Link-S. You are prompted to supply the version of the Finite Element Method program MARC used at your site. You are also prompted to supply the pathname to the directory where MARC is stored. If you do not have MARC at this site, ignore the prompt. You might be required to provide the password of the owner of the directory where MARC is stored. A special version of MARCK61 is built by the *maintain_ideasopen* program.

Step 3: system identifier Make preparations for the installation of the passwords. For this, you need to generate unique *identifiers* for each of the systems on which you intend to use MARC. Using the installation script *maintain_ideasopen*, choose *option 2* from the main menu list. A submenu appears. Choose *option 2.1* from this submenu for the generation of the system identifier.

Note: You are asked where the security files should reside. The default is the *marclink_s* subdirectory *security*. This directory must have read and write access for all. You are asked to supply the license number on the magnetic media and in the accompanying letter; e.g. MAID100.U6123. Next, you are asked for your name, address etc. See Appendix A for a sample session.

repeat, if needed

Note: In case you are installing the program to run on more than one machine, please log in to all the machines and perform steps 2 and 3 for each machine. You end up with multiple identifier files *sid002.dat*, *sid003.dat*, etc., assuming you are using a single disk location linked across the network.

**Step 4:
send to
MARC** The system identifier is stored in the subdirectory *security* in a file called *sid001.dat*. With multiple platform licenses, you see files called *sid002.dat*, *sid003.dat*, etc. Send this file(s) to the nearest MARC office. The file(s) can be printed using the *maintain_ideasopen option 2.3*. Send the printout by telefax to the nearest MARC office. If you have access to E-mail, you can mail the system identifiers directly using the *maintain_ideasopen option 2.4*.

**Step 5:
password** After receiving the passwords from the MARC office, enter them by means of the same *maintain_ideasopen* program. Choose *option 2.5* of the security submenu to enter the passwords. For a first time installation, choose the option *add new* and enter the license code, password, number of machines and processor code(s). One processor code is needed for each machine running the MARC/Link-S program. From this time onward, every time the passwords are (re)installed, you overwrite the existing license. This is the preferred option for password renewal.

Note: The password section makes no distinction between upper and lower case letters and ignores imbedded blanks.

**Step 6:
Initialize
working
directory** You will be prompted to supply the pathname to the directory where MARC/Link-S Interface is to be initiated from I-DEAS. This step is repeated for every file system location where the interface is to be executed. The *maintain_ideasopen* program copies a number of required files to the working directory. The files (*ideasoastart.sh*, *suptab.icn*, and *suptab.vgc*) are required. You have the option of locating these files in alternate locations to be shared by all MARC/Link-S users at your site. Consult your site's I-DEAS administrator.

**Step 7:
checking** Repeatedly choose the *exit* option to leave the installation script:

- 0) *Exit from the Initialize submenu*
- 0) *Exit from the installation program*

Go to the directory where the MARC/Link-S Interface is to be initiated from I-DEAS. Follow the instructions provided in the file named README to run the interface.

Note: Should the MARC/Link-S program fail to start, please use the checklist in Appendix B to verify whether the installation was executed correctly. Contact MARC customer support if you are still unable to run the program.

Chapter 4 Running MARC/Link-S

This section describes the MARC/Link-S usage on UNIX based machines applicable to either BSD4 or System V machines except where noted. The MARC/Link-S interface is started by an I-DEAS Hidden Menu command called MARC_INTERFACE. This Hidden Menu command is defined in a shell script *ideosoastart.sh* stored in the I-DEAS working directory. In I-DEAS prompt region, enter "oaxx run MARC_INTERFACE". This can also be achieved by selecting the middle MARC Icon on the MARC Icon Panel. The MARC/Link-S interface creates the default files in your current working directory; i.e., where you are located at the time of starting the MARC/Link-S interface.

The *ideosoastart.sh* contains arguments which are passed to the MARC/Link-S interface. Table 2 gives the meaning of these input options. You are free to alter these commands to suit your preference.

Table 2 MARC/Link-S Input Options

Keyword	Options	Description
		DIR=(full path of <i>marclink_s</i> installation directory)
-menupath	\$(DIR)/menus.ideas/	Directory path name for menu files locations.
-helppath	\$(DIR)/help/	Directory path name for help files locations.
-toolpath	\$(DIR)/bin/	Directory path name for external MARC/Link-S programs and shell scripts locations.
-font	8x15	Default font type.
-aspect_ratio	4	Ratio between screen width and height.
-area_ratio	0.12	Area fill ratio: full screen is 1.00.
-linelength	160	Maximum number of characters on text screen section.
-maxlines	100	Maximum number of text lines held in buffer
-double_buffering	on	Double buffering: a screen refresh is first assembled in a separate memory section and then displayed. This option results in a smooth appearance.
-procedure_file	<i>filename</i>	Optional procedure file executed at the initialization interface menus.

Chapter 5: MARC/Link-S Interfaces

MARC/Link-S External Programs

Interfaces are programmed in external programs called from within MARC/Link-S. The interface programs are stored in the *marlink_s* subdirectory *bin*.

MARC Jobs

The subdirectory *bin* contains shell script files to start a MARC FEM job or to abort the job using the following shell scripts:

submit1, submit2, submit3,
and
kill1, kill2, kill3

These shell scripts are called buttons in the *job* menu.

You can alter these files to suit your environment; e.g., set up one of the *submit* scripts so it starts a MARC job on a different machine on your network.

Edit

The *edit_window* shell script is used to control the editor associated with the EDIT commands. It is possible to change the type of editor; e.g., from vi to emacs or change the type of windowing environment.

System Shell

The *system_window* shell script controls the type of window opened with the *system_shell* command. It is possible to change the type of window.

Appendix A: Sample Installation of MARC/Link-S

In this appendix, a sample installation, assuming a single license installation, is demonstrated.

Step 1: read tape `cd "parent_directory"`
 `tar xvof /dev/tape`

Step 2: pathnames `cd marclink_s/maint`
 `./maintain_ideasopen`

MARC/Link-S Maintenance program for UNIX systems
MARC Analysis Research Corporation

Main menu

- 1) *Install the MARC/Link-S interface on your system*
- 2) *Install Security*
- 3) *Initialize an I-DEAS working directory*
- 4) *Help*
- 0) *Exit from this program*

select option 1

Selection : 1

Enter MARC version : ('k62', 'k61', or 'previous') [previous]k61

enter the pathname to the MARCK61 directory: /use/sft/marck61

MARC executable saved as marck61.bak2

Making a new MARC executable. This may take a few minutes...

aaa.f:

ardirm:

aread:

aread8:

.

.

.

submit1 file adjusted.

submit2 file adjusted.

submit3 file adjusted.

Step 3: system id select option 2

MARC/Link-S license submenu

- 2.1) *Install the license code* *(install_spp)*
- 2.2) *Show the system identifier(s)*
- 2.3) *Print the system identifier(s)*
- 2.4) *Send the system identifier(s)*
- 2.5) *Enter the passwords* *(license)*
- 2.6) *Clear logfile* *(marcrst)*
- 2.7) *Make a new logfile* *(mklog)*
- 2.8) *Reset all*
- 2.9) *Help*
- 0) *Return to install submenu*

select option 2.1

Selection : 2.1

Enter your data

Enter the directory path to the security(/?/security) :
Enter the directory path to the alternative security(/?/security) :
New log file successfully created.
Enter MARC license code () : **maid100.u6123**
Current customer data :
Your company name () : **PieMontVue Inc.**
Your department () : **Computational Analysis**
Your company address () : **Burbanksquare 13**
Postal code and city () : **Woodslan, Ca 97001**
Country () : **USA**
Your name () : **John Smith**
Your function () : **System Engineer**
Your telephone number () : **498 877922**
Your telefax number () : **498 877010**
Any changes ? (Y/N) : **n**
Current system data :
Computer type () : **Silicon Graphics**
Computer model () : **Challenge**
Any changes ? (Y/N) : **n**
**** Data written in file "sid001.dat".
Send this file to MARC
Selection : **2.3**

Step 4: send the system identifier to the nearest MARC office

select option 2.3 to print, or 2.4 for E-mail

Step 5: enter passwords

MARC/Link-S license submenu

- 2.1) Install the license code (install_spp)
- 2.2) Show the system identifier(s)
- 2.3) Print the system identifier(s)
- 2.4) Send the system identifier(s)
- 2.5) Enter the passwords (license)
- 2.6) Clear logfile (marcrst)
- 2.7) Make a new logfile (mklog)
- 2.8) Reset all
- 2.9) Help
- 0) Return to install submenu

select option 2.5

Selection : **2.5**
Enter selection :
0 = exit
1 = add new
Enter choice : **1**
Enter MARC license code () : **maid100.u6123**
Enter password () : **m1p9 572p vpm6 dnr7 r5rf mcm1 m12d**
Enter the total number of processors codes (0) : **1**
Enter processor 1 code, * to stop () : **bjy8 7cex vb6f1**
Checksum: **40388**
**** New license file correctly written.
Do you want to rename file "license.new" to "license.dat": y
Selection : **0**
Selection : **0**

select option 0 repeatedly to exit

Appendix B: Troubleshooting

- Cannot read tape**
- ◆ The device name listed in Table 1 might be incorrect for your system. Please consult your system manager.
 - ◆ Byte-swapping might have occurred. Try to read in the tape using either:


```
dd if=your_tape_dev_name conv=noswab | tar xvof -
```

 or:


```
dd if=your_tape_dev_name conv=swab | tar xvof -
```
- Cannot create**
- ◆ You have no write permission in the parent directory. Change with *chmod*.
 - ◆ You are reading in the tape without the option "o" so ownership of the files is set to that found on the tape.
- No "hostname"**
- ◆ The *interface* program requires that a so-called hostname is available. If it is not set, choose a name by:


```
hostname my_choice_for_a_hostname
```
- Security failed**
- ◆ Pathnames to files used by the password protection code are not set correctly. Executing installation steps 2 and 3 should solve this problem.
 - ◆ Every MARC/Link-S user should have read rights for the *marlink_s* subdirectory *security*.
 - ◆ Every MARC/Link-S user should have read rights to the following files in the *marlink_s* subdirectory *security*: **customer.dat**, **license.dat**
 - ◆ For limited licenses (e.g. limited number of simultaneous jobs) every MARC/Link-S user should have write access rights to the *marlink_s* subdirectory *security* and the file **MARC.LOG** therein.
 - ◆ You are attempting to run on a machine that according to the MARC/Link-S password(s) you are not allowed to use.
 - ◆ Your license period is expired. Check the date on your machine.
 - ◆ You are attempting to install the MARC/Link-S program out of the installation period. Check the date, reset if necessary, and reinstall passwords.
 - ◆ For limited licenses, lock cannot be set. If a file called **MARC.LOG** exists in the *marlink_s* subdirectory *security*, remove it. It was probably left by an aborted MARC/Link-S session.
 - ◆ For limited licenses, currently there are too many MARC/Link-S jobs running. Try later. If the limit is not exceeded, the following can have occurred: when a MARC/Link-S job is started, an entry is made in the file **MARC.LOG** in the *marlink_s* subdirectory *security*. If the job ends normally, this entry is removed. If a job aborts, the entry remains and must be removed manually:


```
cd marlink_s/maint
./maintain
choose option 2.6 from the license submenu
```

 If this does not solve the problem, create a new file **MARC.LOG** by means of the option 2.7.
 - ◆ Cannot access or read the file **customer.dat** in the *marlink_s* subdirectory *security*.
 - ◆ For limited licenses, the file **MARC.LOG** in the *marlink_s* subdirectory *security* was corrupted while the MARC/Link-S session was active.

- Cannot open the display**
- ◆ MARC/Link-S requires the X-window device support eight-bit plane psuedo color. For X-windows, use *xdpyinfo* to see if your screen supports eight-bit planes. For SGI, the device supports GL or OpenGL.
 - ◆ If using a terminal other than the default screen belonging to the machine, set the X-window output device:
C-shell: setenv DISPLAY your_terminal_name:0.0
Bourne shell: DISPLAY = your_terminal_name:0.0
 export DISPLAY
- MARC/Link-S runs OK, then aborts**
- ◆ This might happen when the model you are working on becomes very large. MARC/Link-S requires a considerable amount of memory to store the model. We advise that a minimum of 32 Mb core memory is available in your machine.
 - ◆ Save memory by switching off the double buffering mode.
- MARC/Link-S MARC Icons are not displayed**
- ◆ This would happen if you are running I-DEAS Master Series 2.0 or earlier version. Please install Master Series 2.1 or later.

Appendix C: MARC/Link-S Files and Subdirectories

The MARC/Link-S version you received contains a full set of subdirectories and files listed below. You can save disk space by removing the unnecessary subsets.

Table 5 Contents of the MARC/Link-S Distribution Tape

Basic set:	Contents: required as minimum
maint	shell scripts for installation of MARC/Link-S
bin	shell scripts and programs for MARC/Link-S
menus.ideas	MARC/Link-S menu files
help	MARC/Link-S online help files
security	password security files
ideasresults	Patches to MARCK61
ideasopen	Release notes, README file and example archive file
ideasicons	I-DEAS startup shell and MARC icons

MARC/Link-S Version 1.1

This version works with:

I-DEAS Master Series release 2.1, MARCK61 with included modifications, and MARCK62.

1. This release will work with Geometry Based I-DEAS FEM models.
2. Variable node thicknesses created in I-DEAS cannot be passed to MARC.
3. Surface normals or parametrization of curves and surfaces to be used with the contact capability cannot be graphically verified and/or modified.
4. There is no graphic feedback for FEM entities, loads, and boundary conditions created using the MARC/Link-S extended menus.
5. After the interface is initialized, the FEM model cannot be modified or added to within I-DEAS. The updated information is passed to MARC by re-initializing the interface. Any modifications and additions using the previous interface session are lost.
6. Only free (external) element edge and faces are pickable in I-DEAS.
7. At every adaptive mesh step or rezoning, MARC writes a new results universal file.
8. MARC does not write Node at Element results correctly. The I-DEAS results menus for this option have been eliminated.
9. The MARC/Link-S extended menus do not provide for creation of tables. I-DEAS provides creation of time tables for structural loads and temperature tables for heat transfer boundary conditions. Nonlinear material properties are not read by the interface. The work around for the above situations is to create a dummy time varying load and entering the table values in the time table. Use the table menus under the utilities in the MARC/Link-S extended menus to

change the table to the appropriate type. The final step is to select the table where required.

10. To check for inside out elements in I-DEAS, use the hardware or the NURBS rendering options and rotate the model to check for dark elements.
11. Below is a quote from *Frequent Questions About I-DEAS Master Series release 1.3* on how to create multiple deformable contact bodies:

“How do I create a single finite element model of multiple parts?”

There are two different methods for creating a finite element model of multiple parts. The first method is to combine the solids first; then create one finite element model based on the combined solid part. The second method is to create individual finite element models for each part; then, append the finite element models into a single finite element model.

To use the first method, join the parts together in the Master Modeler task. Joining parts that touch will result in a part with no discrete part boundaries. If you need discrete boundaries, partition the resulting part into multiple volumes. Each volume then represents one of the original parts created on this single part. To use the second method, append the meshes together in a single model using the Manage/Append command.”

12. Nodes included in Groups in I-DEAS are not passed as node sets. Elements included in groups are passed as element sets.