



**Change Pages for CLIPPER System  
Administrator's Guide**

*DSA029911*

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**INTERGRAPH**



## Changing Your Pages

Replace the pages in the January '90 edition of your *CLIPPER System Administrator's Guide* with the following change pages (dated June '90). Note that a date appears at the bottom of each change page to help you identify the most recent version of a manual page when you have more than one release.

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## 2.2 The /etc/getty Process

The */etc/getty* process opens a device and spawns a login process to that device. For example, *getty* sets up a terminal line between workstation windows and the operating system or between CTTs and the operating system.

The *getty* process reads the */etc/gettydefs* file, which contains information on setting the terminal type, modes, speed, and line discipline. The *gettydefs* file also contains the default login prompt for the device.

The *gettydefs* file is commonly modified so that the login prompt that appears on the device is changed. For example, if your configuration includes several servers with alphanumeric terminals connected to them, you can modify the login prompts so that they uniquely identify the server. For example, you can modify a console login prompt to appear as "IS4000 console>>".

## 2.3 Modifying the *inittab* and *gettydefs* Files for a 32-Channel RS-232 Interface Assembly

If your workstation/server is equipped with a 32-channel RS-232 interface assembly, you may need to modify the */etc/inittab* file before attaching external devices that require a *getty* process to be running. (Any device that requires a login prompt requires a *getty* process to be running.) To determine if your workstation/server is equipped with a 32-channel RS-232 interface assembly, use the *showconfig* command to list the boards in the system. If the 32-channel serial interface board (MPCB821) is listed, the workstation/server is equipped with the 32-channel interface assembly.

If the device you are attaching is not supported by the current *gettydefs* settings, the */etc/gettydefs* file may also need to be modified. The 9600 baud rate (and its associated settings) is the default *gettydefs* setting and is suitable for most terminal devices. Refer to the information delivered with the external device being connected to determine the correct settings.

### 2.3.1 Modifying the */etc/inittab* File

In this subsection the terms *respawn* and *off* refer to how the port interprets the device attached to it. For example, a device (such as an alphanumeric terminal) that requires a login prompt requires the *respawn* delimiter. A device (such as a printer or plotter) that does not require a login prompt should use the *off* delimiter. A modem should be set to *respawn* when used for dialing in only and *off* when used for dialing out only.

**Note:**

For more information on the *inittab* and *gettydefs* files, refer to the *inittab(4)* and *gettydefs(4)* entries in the *AT&T UNIX System V Programmer's Reference Manual*. For more information on the *getty* process, see the *AT&T UNIX System V Administrator's Reference Manual*.

The */etc/inittab* file must include an entry beginning with "r" followed by the number of the port (0-31) you are connecting a device to. Proceed through the following steps to modify the */etc/inittab* file:

1. Access the superuser account by keying in *su -* at the system prompt.

**Note:**

Be sure to include the "-" after the "su" to access the login environment of root.

2. Change to the */etc* directory.
3. Edit the *inittab* file and create an entry corresponding to the port the device is being connected to. Be sure the device parameters entered (for example, 9600 baud rate in the following examples) match those of the device being connected. The format for the *inittab* entry is as follows:

**id:rstate:action:process**

**Notes:**

For more information on the fields for the *inittab* entries, refer to the *inittab(4)* and *gettydefs(4)* entries in the *AT&T UNIX System V Programmer's Reference Manual* and the entry for the *getty* entry in the *AT&T UNIX System V System Administrator's Reference Manual*.

In the following examples, "9600" is a label that refers to the associated baud rate entry in the *gettydefs* file.

- For a device requiring the respawn delimiter, an example of the syntax for port 0 is as follows:

**r0:234:respawn:/etc/getty ttr00 9600 none**

An example of the syntax for port 1 is as follows:

**r1:234:respawn:/etc/getty ttr01 9600 none**

- For a device requiring the off delimiter, an example of the syntax for port 0 is as follows:

**r0:234:off:/etc/getty ttr00 9600 none**

An example of the syntax for port 1 is as follows:

**r1:234:off:/etc/getty ttr01 9600 none**

4. Continue adding the appropriate line for each port being connected.
5. Initialize the new *inittab* settings by keying in *init q* at the superuser prompt.

### 2.3.2 Modifying the */etc/gettydefs* File

If you are connecting a device whose parameter setup is not supported in the */etc/gettydefs* file, you need to modify the file to support the new device. The new entry should match the terminal settings (such as baud rate, local echo, stop bits, or data bits) of the device being connected. Refer to the information delivered with the device to determine its correct settings.

**Note:**

Refer to the *termio(7S)* entry in the *CLIX System Administrator's Reference Manual* for more information on terminal settings.

Proceed through the following steps to modify the */etc/gettydefs* file:

1. Access the superuser account by keying in `su -` at the system prompt.

**Note:**

Be sure to include the "-" after the "su" to access the root login environment.

2. Change to the */etc* directory.
3. Edit the *gettydefs* file and create an entry whose parameters correspond to those of the device being connected.

**Note:**

When editing the file, verify that the entry contains no carriage returns before the end of the line.



## 2.4 The /etc/rc2 Process

The */etc/rc2* file is a shell script executed (spawned) on run level 2 (multiuser environment). The */etc/rc2* file starts the processes for run level 2. The processes invoked by *rc2* reside in files in an associated directory, */etc/rc2.d*.

The */etc/rc2.d* directory contains startup processes for run level 2. Each startup file starts with an S and is followed by a two-digit priority number. The following is a sample listing of the *rc2.d* directory:

```
# ls /etc/rc2.d
S01MOUNTFSYS  S04errord          S70uuuap          S85inc
S01SWAPADD    S05RMTMPFILES     S75cron           S90nqs
S02DODINI     S20stssetup       S80smgr
```

These startup files are shell scripts. These shell scripts invoke standard processes (such as setting up and mounting the */usr* file system(s), cleaning up and removing the */tmp* and */usr/tmp* directories, and starting cron) that must be started for run level 2. In addition, they initialize products (such as the Screen Manager and Intergraph Network Core (INC)) specific to the Intergraph multiuser environment.

Any other processes that need to be initialized when the system boots into multiuser mode (run level 2) must be linked from the */etc/init.d* directory to the *rc2.d* directory.

### Note:

"Initializing Additional Processes from Multiuser Mode" in 2.4.2 describes how to link and initialize processes such as *lp*, *lpr*, *perf*, and accounting so they start automatically in multiuser mode.

### 2.4.1 The /etc/init.d Directory

All startup and kill processes invoked at system initialization or shut down are stored in one common directory, */etc/init.d*. The files in *rc2.d* and *rc3.d* are linked to */etc/init.d* so they are executed at the specified run level. The *init.d* directory acts as a common holding place for startup and kill shell scripts.

Some startup and kill files, such as accounting, *lp*, *lpr*, and *perf* may not be linked to the *rc<n>.d* directory, and, therefore, will not be started automatically. The following section describes how to add processes to *rc2.d* so they are automatically started at bootup.

## 2.4.2 Initializing Additional Programs from Multiuser Mode

The startup files for `accounting`, `lp` (line printer spooling utilities), `lpr` (Berkley printer spooling utilities), and `perf` (performance measurement utilities) are stored in the `/etc/init.d` directory but are not linked to a multiuser directory (`/etc/rc2.d` or `/etc/rc3.d`) by default.

Follow these steps to link `accounting`, `lp`, `lpr`, or `perf` to a multiuser directory so they are invoked automatically when the system boots:

1. Access the superuser account and change to the `/etc/init.d` directory as follows:

```
# cd /etc/init.d
```

2. Key in the program filename followed by `init`, as shown in the following example:

```
# ./lp init
# ./acct init
# ./lpr init
# ./perf init
```

The programs are now linked to the `rc2.d` directory and will be automatically invoked when you enter run level 2. They are automatically assigned a new filename and priority number.

**Note:**

For information on `lpr` refer to the *CLIX Programmer's and User's Reference Manual*. For information on the `lp` command refer to the *AT&T UNIX System V User's Reference Manual*. For information on `accounting` refer to the *AT&T UNIX System V Programmer's Reference Manual*. For information on the `perf` program refer to the `sa(1)` and `sa(1M)` commands in the *AT&T UNIX System V System Administrator's Reference Manual*.

## 6.1 Configuring a Line Printer

A dedicated line printer is a useful tool for workstation users. Follow these steps to configure a line printer:

1. Connect the line printer to the RS-232 port on the workstation. A special serial cable must be used to connect the line printer to the workstation. The pin connections for the cable are as follows:

Workstation Pin	Line Printer Pin
2	3
3	2
5	20
7	7

2. Configure the RS-232 port for the line printer on the Peripheral Configuration Utility Page. To do this, reboot the system and enter the Utility Pages. Access the Peripheral Configuration Utility Page. On the Serial Parameters section of this Utility Page, set the Port Type to RS-232 and then set the parameters appropriately for the line printer you are using.
3. You must alter the *lp* file to reflect site-specific factors such as the RS-232 port number and the printer model type. To do this, use an ASCII text editor to edit the */etc/init.d/lp* file. This file (by default) contains the following line:

```
/usr/lib/lpadmin -plp0 -v/dev/tty00 -mepson
```

Substitute the proper port and model type for your line printer in this line. The following are valid printer model types. You can list these model types by keying in the following command:

```
$ ls /usr/spool/lp/model
1640      epson      hp          ph.daps     prx
dumb      f450      model.mk    ppx
```

If the name of the printer model you are using is not listed, specify *dumb* as the model type.

4. Edit the */usr/spool/lp/model/<model\_type>* file for the printer model you are using. In this file, check the printer characteristics to ensure that they match your printer. (Note that baud rate is specified by *stty*.)

5. Initialize the lp software so that the processes required to operate the line printer will be started each time the system is booted. To initialize software, the *root* user must execute the */etc/init.d/lp* file as follows with an argument of *init*:

```
# cd /etc/init.d  
# ./lp init
```

The line printer is now ready to be used. Proceed to the next section for instructions for printing to this printer.

## 11.6 Formatting the Hard Disk

If the Verify procedure fails, you must format the hard disk. Otherwise, formatting is optional. Formatting overwrites all data on the hard disk; therefore, you should not format unless the Verify procedure failed.

Formatting involves structuring the disk so that hardware and software can communicate with the disk. This process writes a test pattern to the disk and reads it to verify the pattern, checks for any errors, and marks locations on the disk (flaws) that cause errors. These flaws are recorded to prevent any future writing to or reading from that location.

Rebuilding without formatting is possible. In many cases, only part of the hard disk is corrupted. You may be able to restore the corrupted file system(s) without formatting the hard disk. If you format, you will lose all data on the disk; if you do not format, you will lose only the data in file systems that you restore. If you do not wish to format the hard disk, proceed to 11.7, "Selecting the Rebuild Utility Page Icon."

Formatting takes approximately 45 minutes for 80-MB hard disks, 30 minutes for 156-MB hard disks, 25 minutes for 180-MB hard disks, 30 minutes for 355-MB hard disks, and 50 minutes for 670-MB hard disks.

**Caution:**

Formatting destroys all data on the disk. Therefore, back up all personal files before formatting.

Formatting procedures for workstations and servers differ and are described separately.

### 11.6.1 Formatting Workstation Hard Disks

Follow these steps to format workstation hard disks:

1. From the Main Utility Page, select the Disk Maintenance Utility Page.
2. When the Disk Maintenance Utility Page appears, select the following settings for an internal hard disk:

SCSI ID = 0  
Logical Unit Number = 0

For an external hard disk, you would set the SCSI ID to 1, 2, or 3, and the LUN would be 0.

3. Match the Intergraph Part Number on the Hard Disk Profile Sheet with the part number in the Disk Type roll-through box.
4. Key in the serial number from the Hard Disk Profile Sheet if it does not display in the Serial Number data entry field.
5. Select the Next Page screen button to access the Hard Disk Flaw Data Utility Page. Select the following settings:

Format With Flaw Data - Yes

Selecting yes for the Format With Flaw data option prevents flaws on the disk from being ignored during the format process.

Verify on Format - Yes

Selecting yes for the Verify on Format option runs the Verify procedure to record any new flaws found on the disk during the format.

6. Select the Format screen button to access the red Format Utility Page.
7. Select the Format screen button to start the procedure. While the format procedure is running, messages revealing the part of the disk being verified and identifying the bad blocks appear on the screen. You do not need to respond to any of these messages. The message "Format Complete" appears when formatting is finished. (Formatting takes approximately 45 minutes for 80-MB hard disks, 30 minutes for 156-MB hard disks, 25 minutes for 180-MB hard disks, 30 minutes for 355-MB hard disks, and 50 minutes for 670-MB hard disks.) Select the Previous Page screen button to return to the Hard Disk Flaw Data Utility Page.
8. Proceed to 11.7, "Selecting the Rebuild Utility Page Icon," for the next step in the rebuild process.

### 11.6.2 Formatting Server Hard Disks

Follow these steps to format an InterServe hard disk:

1. From the Main Utility Page, key in DM to display the Disk Maintenance Utilities menu.
2. Key in the following to set the SCSI ID to 0:

Option: SCSI 0

3. Key in the following to set the logical unit number to 0:

Option: LUN 0

4. Key in the following, where <serial number> is the correct serial number for the disk as the Hard Disk Profile Sheet indicates:

Option: SN <serial-number>

5. Key in the following so that flaw data will be considered during the format:

Option: FWF Y

6. Key in the following for the flaw data list to be verified during the format and for any additional bad blocks to be added to the list and registered:

Option: FWV Y

7. Key in the following to start the format procedure:

Option: FORMAT

While the format procedure is running, messages revealing the part of the disk being verified and identifying the bad blocks appear on the screen. The message "Format Complete" appears when formatting is finished. (Formatting takes approximately 45 minutes for 80-MB hard disks, 30 minutes for 156-MB hard disks, 25 minutes for 180-MB hard disks, 30 minutes for 355-MB hard disks, and 50 minutes for 670-MB hard disks.)

8. Proceed to 11.7, "Selecting the Rebuild Utility Page Icon," for the next step in the rebuild process.

## 11.7 Selecting the Rebuild Utility Page Icon

After verifying and formatting the hard disk, the next step in the rebuild process is selecting the Rebuild Utility Page from the Main Utility Page. Do so by selecting the Rebuild icon on the Main Utility Page (for workstations) or keying in REBUILD at the Main Utility Page (for servers).

The Rebuild Utility Page allows you to repartition, load Rebuild media, and enter the Rebuild environment. Before you can begin restoring the file systems, you must have specified an acceptable partition table, successfully loaded the Rebuild media, and selected the icon to enter the Rebuild environment. If any of these steps has not been completed, you will not be allowed to continue the rebuild process.

Notice that the left portion of the Rebuild Utility Page displays messages concerning your current status and your next step. While you are using the Rebuild Utility Page, refer to this message area for brief instructions.

Proceed to 11.8, "Repartitioning the Hard Disk."



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