FastBuild™ Configuration Setup

The FastBuild™ setup gives menu choices to create and manage disk arrays on the Promise FastTrak adapter.

BIOS Startup Screen

```
FastTrak (R) BIOS Version 100.100.101
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ID      MODE        SIZE      TRACK-MAPPING      STATUS

0 *     2+0 Stripe  1224M       611/128/32       Functional
1       1x2 Mirror  612M        620/32/63        Functional

Press <F2> to enter Array BIOS Configuration Utility....
```

During the system startup, the Promise BIOS screen will appear as shown.

This displays the adapter BIOS version and array status. The array status consists of three possible conditions: *Functional, Critical, Offline*.

Functional - The array is operational.

Critical - The mirrored array contains a drive that has failed or disconnected. The mate of the drive is functional but has lost its fault tolerance. The user should identify the failed drive though the FastBuild™ Setup menu utility, and then replace the problem drive.

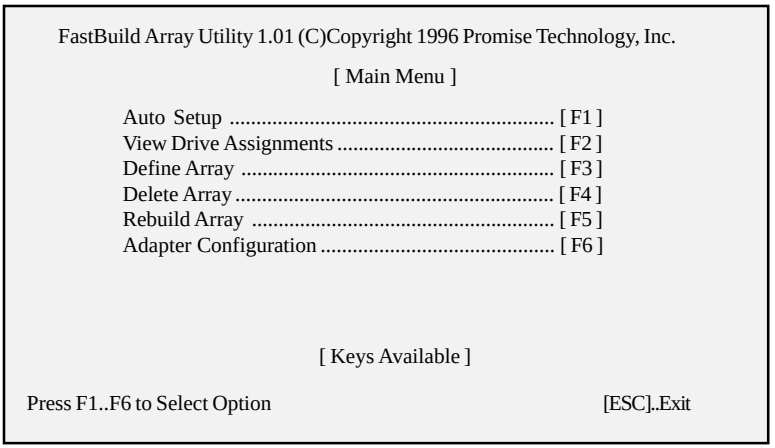
Offline - A mirrored array has 2+ drives or a striped array has 1+ drives that have failed or have been disconnected. Mirrored arrays with 2+ drives that have failed cannot be rebuilt with the FastTrak utility and must be restored from the last backup. Striped arrays do not have fault tolerance and would always require a restoration from backup when a drive has failed.

FastBuild™ Setup Menus

When using the menus, these are some the basic navigation tips: Arrow keys highlights through choices; [Space] bar key allows to cycle through options; [Enter] key selects an option; [ESC] key is used to abort or exit the current menu.

Main Menu

This is the first option screen when entering the FastBuild™ Setup.

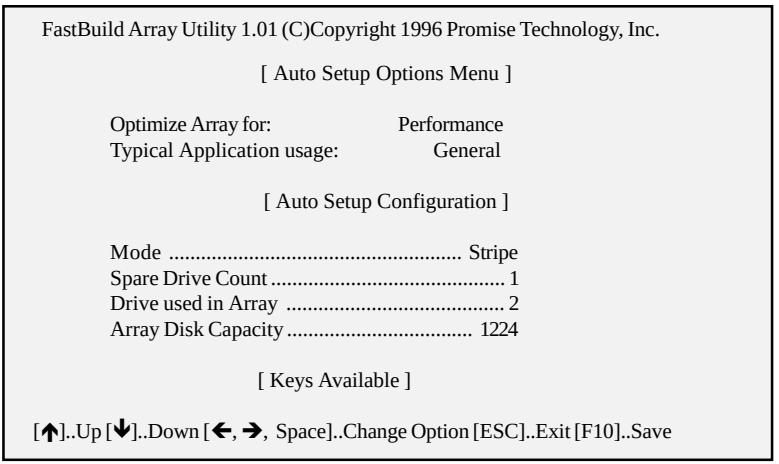


To create a new array, follow the steps under the <F1> Auto Setup or <F3> Define Array.

To repair an array, use the <F5> Rebuild Array option.

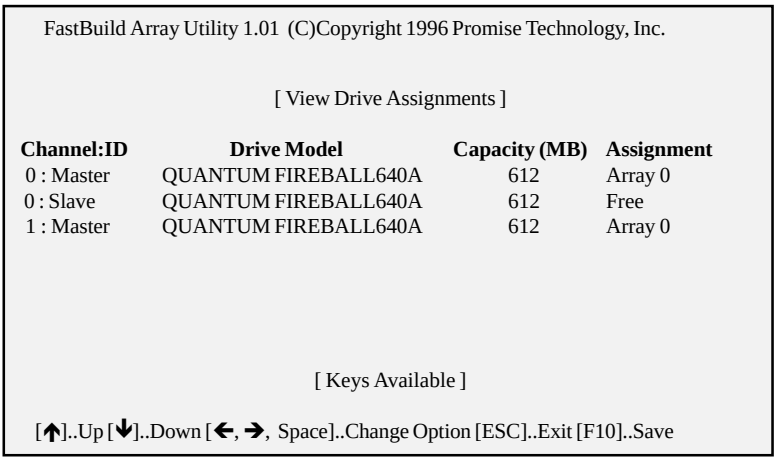
<F1> Auto Setup

The <F1> Setup can intuitively help create your disk array. It will assign all available drives appropriate for the disk array you are creating.



The “Optimize Array for:” setting has three choices - Performance (Striping), Fault Tolerance(Mirror), and Capacity(Spanning).

“Typical application usage” allows the user to choose the type of software to optimized for speed enhancement. The recommended stripe will then appear in the [Auto Setup Configuration].



Spare Drive Count

The extra drives that are not assigned to a disk array will be recognized as a Spare Drive for use with mirrored disk arrays. These drives are standby replacements and are added to the array while the failed disk member is removed and labeled bad/unusable. To restore fault tolerance, an automatic data rebuild is completed in the background without the need to restart the system. At a later time, the failed drive can be physically removed from the FastTrak adapter and an extra drive added in its place to be on standby.

Adding Fault Tolerance to an Existing Drive

In case that the FastTrak was purchased to add Fault Tolerance to an existing system drive, you may use the <F3> Define Array option to mirror an existing drive onto another drive. This option is available when you have one existing drive and are duplicating data onto a like or greater capacity mirror drive.

See <F3> Define Array option for this feature.

Creating Multiple Disk Arrays with Auto Setup

If you plan to create multiple arrays, attach the drives necessary to create the first disk array and complete the <F1> Auto Setup. Second, install the additional drives for the second array and again use the <F1> Auto Setup. Repeat if more disk arrays need to be created.

You can manually create disk arrays with the <F3> Define Array option if necessary.

<F2> View Drive Assignments

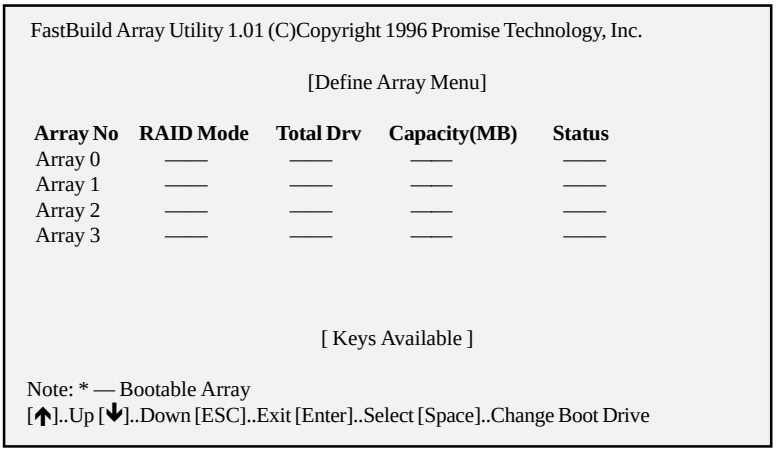
This option is to display whether drives are assigned to a disk arrays or are free.

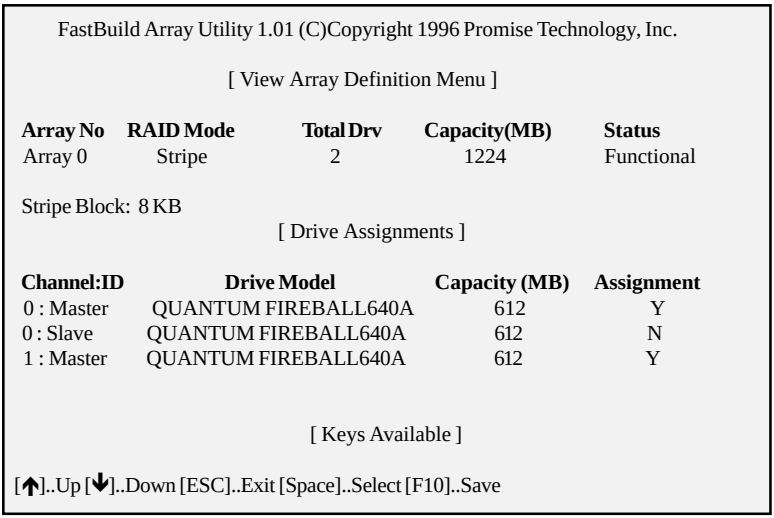
Under "Assignment" drives are labeled with their disk array or "Free." Unassigned Free drives can be used for a future array or used as a spare drive when a drive fails in a mirrored array. Note that unassigned drives are not accessible by the operating system.

<F3> Define Array

The following screen as no disk arrays defined. To manually create a disk array, use the arrow keys to highlight the array number you wish to define and press [Enter] to select. The following menu will allow drive assignments of the disk array.

NOTE: For most installations, Promise recommends the <F1> Auto Setup for easy disk array creation.





View Array Definition Menu

Highlight the Array and use the [Space] key to cycle through three array types - Performance (Striping), Fault Tolerance(Mirror), and Capacity(Spanning).

Performance

Supports the maximum performance where the capacity equals the number of drives times the capacity of the smallest drive in the disk array. Change the Stripe Block sectors that best optimizes system applications. Using a Stripe Block size of 8 KB is normally recommended for business applications and 64KB for server and Audio/Video editing applications.

Spanning

Achieves the maximum amount of capacity by adding the sum of all the drives. The Stripe Block option does not apply.

Fault Tolerance

Allows creation of fault tolerant arrays for data security. Also provides a feature to add fault tolerance to one drive with existing data. The Stripe Block option does not apply.

Drive Assignments Options

Under the [Drive Assignments] section, highlight the drive and with the [Space] bar key change the Assignable option to "Y" to add the drive to the disk array. Press <F10> the save the disk array information.

Adding Fault Tolerance to an Existing Drive

The FastTrak may be used to add Fault Tolerance to an existing system drive. This is achieved by mirroring the one existing drive to a like or greater capacity mirror drive.

After initiating the <F10> Save command, confirm Y to the message to mirroring an existing drive:

```
Do you want the disk image to be duplicated to another? (Yes/No)
Y - Create and Duplicate
N - Create Only
```

You will be prompted to select the Source drive from the two available drives:

```
                    [Please Select A Source Disk]
Channel:ID          Drive Model                 Capacity (MB)
 0 :Master          QUANTUM FIREBALL640A        612
 1 :Master          QUANTUM FIREBALL640A        612
```

Arrow down to the drive that has existing data to be mirrored and press [Enter] to select. When prompted, press Y to confirm Yes to start duplicating the source image to the target drive. Note that all target drive data will be erased.

Disk Array Recognition Order

During startup, the disk arrays on the FastTrak are recognized in this order: 1) The array set to bootable in the FastBuild™ Setup, and 2) the Array number (i.e. Array 0, Array 1…). This would be involved in determining which drive letters will be assigned to each disk array.

```
                        [ Define Array Menu ]
 Array No    RAID Mode    Total Drv    Capacity(MB)    Status
  Array 0      Stripe         2           1224        Functional
* Array 1      Mirror         2           612         Functional

* denotes bootable
```

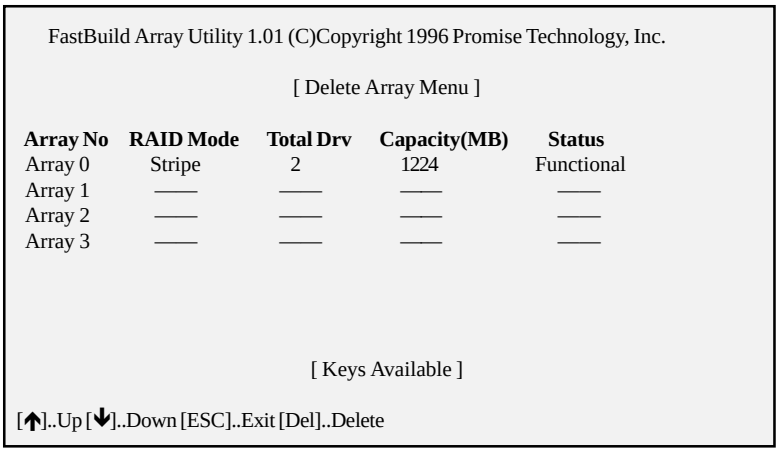
Setting a Disk Array Bootable
From the Main Menu, press <F3> to enter this menu. Highlight the array to define bootable and press [Space] bar key. The system will now recognize this as the first array. If the system is configured with FastTrak as the bootable adapter, it will be the (fixed) boot drive.

Saved Disk Array Information
All Disk Array data is saved into the reserved sector on each array member. At this time, Promise suggests to record the disk array information for future use. Since the array data is redundant, it would be a normally a safeguard for user created changes.

Another feature of the FastTrak disk array system is to recognize drive members even if drives are moved between FastTrak adapters or connectors. Since each drive's array data identifies itself to the array, it is possible to move or swap drives without modifying the array setup. This would be valuable when adding drives, or during a rebuild.

<F4> Delete Array Menu

This menu option allows for deletion of disk array assignments.



Caution: Deletion of an existing disk array could result in its data loss. Record all array information including the array type, the disk members, and stripe block size in case you wish to undo a deletion. Arrays can normally be recovered after array deletion by defining array information identical to the deleted array.

To delete an array, highlight the Array you wish to delete and press the [Del] key. Confirm yes to the following warning message with the <F10> key to continue array deletion.

> Are you sure you want to delete this array? Press F10 to Delete, others to abort

<F5> Rebuild Array

The Rebuild option is necessary to recover from an error in a mirrored disk array. Note: Drives must be replaced if they contain any physical errors.

Follow these steps before using the <F5> Rebuild Array menu option:

From the FastTrak Startup BIOS error message, identify which array has failed.

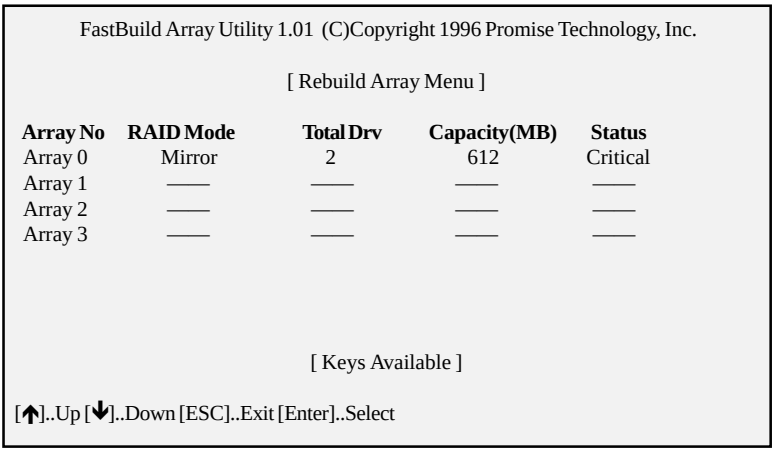
In the FastBuild™ Setup <F3> Define Array select the failed array and identify the Channel and ID of the failed drive

Power off and physically remove the failed drive

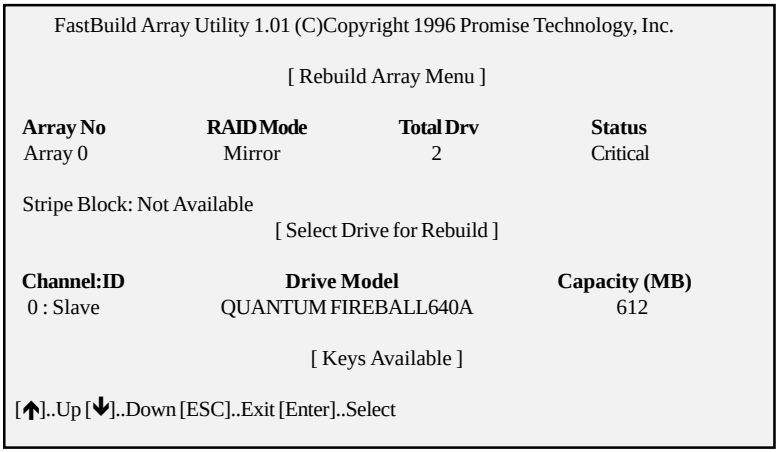
Replace the drive with an identical model

Continue the restoration process with the <F5> option

With a failed drive in a disk array, <F5> Rebuild Menu will show the status as critical.



Highlight the array with the Critical status and press [Enter]. The following screen will then appear:



Under [Select Drive for Rebuild], highlight the drive to replace the failed drive. Press enter and confirm that the data will be copied onto the selected drive. All data on the replacement drive will be written over with mirrored information from the array drive.

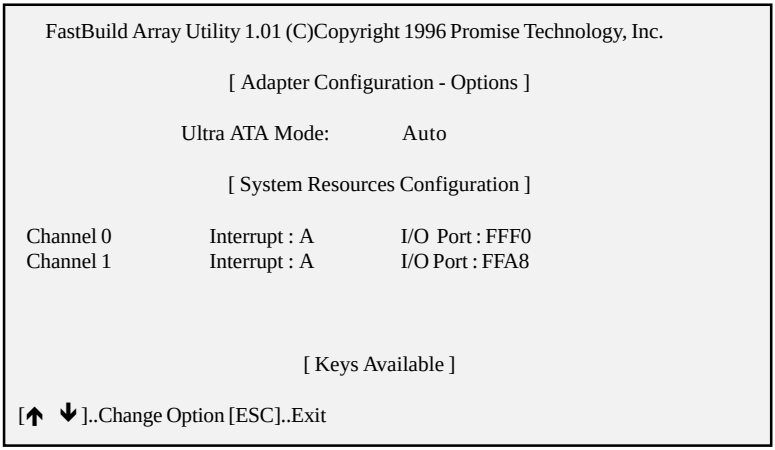
Automatic Rebuilds

For automatic rebuilds of a mirrored array, attach an extra "spare" drive onto the FastTrak. Drives that are not assigned to an array and are larger than the original will be used for the automatic rebuild. This is performed in the background without user intervention. At a later time, the failed drive can be physically removed.

There are no messages that appear when a spare drive is utilized in a background rebuild. To check if a spare drive was utilized, enter the FastBuild™ Setup and check the drives' status.

<F6> Adapter Configuration

This menu allows you view and set the adapter options.



Under [Adatper Configuration - Options], the Ultra ATA Mode sets the disk DMA burst rate. Auto is default to achieve optimize system performance. Turbo forces the fastest data rate while Fast operates in reliable mode.

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